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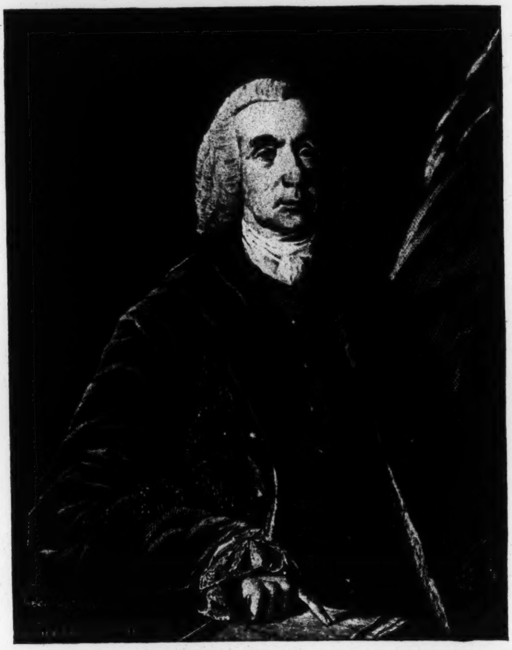

THOMAS DIMSDALE

[1712-1800]

[From Schurigio: Lithologia Historico-Medica, Dresden, 1744.]

ANNALS OF MEDICAL HISTORY

New Series, Volume IV July, 1932 Number 4

THOMAS DIMSDALE, M.D., F.R.S. (1712–1800)

AND THE INOCULATION OF CATHERINE THE GREAT OF RUSSIA

By W. J. BISHOP

LONDON, ENGLAND

THOMAS DIMSDALE came of an old Quaker family that had given many of its members to the profession of medicine. His grandfather, Robert Dimsdale, accompanied William Penn to America in 1684, and took with him his two sons, John and William. Robert Dimsdale was the author of a pamphlet published in 1684: "Advice how to use his medicines, which he chiefly designed for his old friends, who earnestly desired it of him before he left England."[1] He was excommunicated in 1663 for practicing physic without license, and (about 1672) was imprisoned in Hertford gaol for refusal to pay tithes.

The Dimsdales returned to England in a few years, and the father settled in his native village of Theydon Gernon, near Epping, in Essex, in which place the family have held property for centuries. He was succeeded in his practice by his eldest son John, while the other son, William, followed the family calling at Bishop's Stortford. John Dimsdale married Susanna, daughter of Thomas Bowyer, of Albury Hall, near Hertford, by whom he had eight children, four of whom died young. Thomas, the future Baron, the sixth child, was born at Theydon Gernon on May 6, 1712.

Young Thomas Dimsdale was educated by his father, who had an extensive practice, until the latter's death; he then studied successively under Joshua Symonds and John Girle, surgeons at St. Thomas's Hospital, until about 1734.

In 1734 he settled at Hertford as a surgeon, and soon after (July 13, 1739) married Mary, the only daughter of Nathaniel Brassey, Esq., of Roxford, M.P. for Hertford, and an eminent banker in London. After a very short married life Mary died in 1744, leaving no children. Dimsdale severely felt her loss and, in order to lessen its recollection, he offered his services as a surgeon free of charge to the army under the Duke of Cumberland that was advancing to meet the invasion of the Young Pretender. His offer was accepted and he continued with the army till the surrender of Carlisle to the King's forces (December 30, 1745), when he received the Duke's thanks and returned to his professional duties in Hertford.

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[1] This work is recorded by Joseph Smith, *Catalogue of Friends' Books*, 1867, but does not appear to be in any library in England or America.

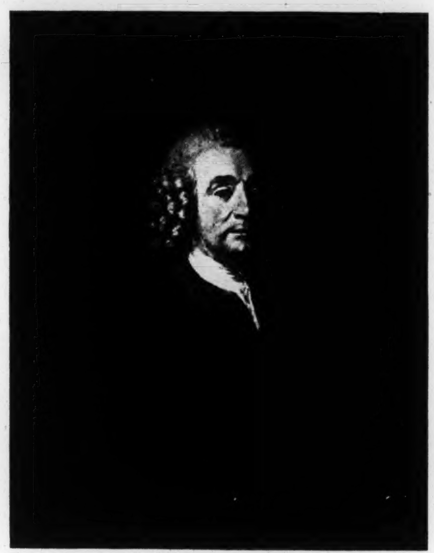

Fig. 1. Thomas Dimsdale, m.d. (1712–1800). From the Mezzotint by T. Burke.

Unfortunately Dimsdale nowhere refers to his experiences as an army surgeon, and it has not been possible to recover any particulars of this episode in his life.[2] He was not at this time a member of the Friends.

In 1746 Dimsdale married Ann Iles, a relative of his first wife, by whom he acquired a large fortune. About this time he also received a legacy upon the death of the widow of his relative Sir John Dimsdale. He then retired from medical practice and took up his residence at the Priory, Hertford, a house built on the site of an old monastery. But having an increasing family by his second wife—seven of his ten children being then living—and possessing great energy and an active mind, he determined to resume medical work as a physician. On July 3, 1761, he took the degree of M.D. at King's College, Aberdeen, being recommended on this occasion by Drs. Munckley and Russell of London, and on August 28 following he was admitted an Extra-Licentiate of the College of Physicians of London.

Inoculation for Smallpox

Dimsdale had long taken a special interest in the practice of inoculation for smallpox and about this time his attention was drawn to the work of the Suttons, whose achievements were then very much in the public eye. In 1757–60 Robert Sutton, an unqualified practitioner of Debenham, in Suffolk, had introduced a new method, which consisted of dietetic preparation for a fortnight previous to operation, inoculation by puncture, and the administration of certain secret medicines. In his hands the operation was a great success and his practice so increased that he trained his two sons, Robert and Daniel, to assist him. They eventually opened an Inoculation House near Ingatestone, in Essex, where patients became so numerous that it was difficult to accommodate them in the village. According to their own account the Suttons inoculated some 17,000 persons by this method, with only five or six deaths. Sutton's method was:

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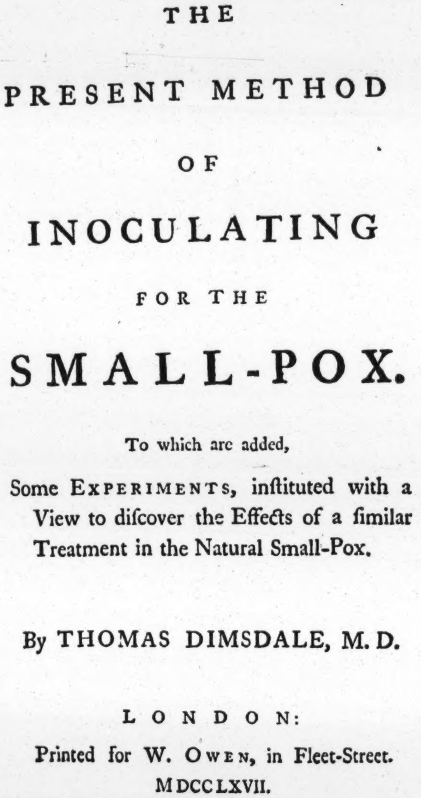
[2] An interesting picture of the medical side of the campaign will be found in Sir John Fortescue's essay on Sick Soldiers of the 'Forty-Five' ("Historical and Military Essays," 1926, pp. 194–199). See also Sir John Pringle's General account of the diseases of the campaign in Great Britain, 1745 and 1746, in his classic work on "Diseases of the Army," 1752; and Major H. A. L. Howell's The Story of the Army Surgeon and the care of the sick and wounded in the British Army, from 1715 to 1748 (*J. Roy. Army M. Corps.*, 22:320–334, 455–471, 1914).

> . . . to take a lancet charged with the smallest possible quantity of the unripe, crude or watery matter from the pustules, and then insert it under the cuticle obliquely in the outer part of the arm, between the scarf and the true skin, barely sufficient to draw blood and not deeper than the sixteenth part of an inch. The raised skin was then pressed down by the finger without further application of plaster or bandages.

Dimsdale studied the work of the Suttons and adopted their methods with some slight alterations, and devoted himself to the practice of inoculation amongst all classes. In 1767 he published his first contribution to the subject: "The Present Method of Inoculating for the Small-Pox," a little book of 160 pages, dedicated to the Royal College of Physicians of London. In the Introduction he states that he has had upwards of twenty years' experience of inoculation and that dissatisfaction with the common methods had made him ever attentive to the improvement of this branch of his employment. He tells of the satisfaction with which he heard that a

> . . . new and more successful method of inoculating was discovered, than had hitherto been practised. The relators give incredible accounts of the success, which was the more marvellous, as the operators were chiefly such as by report could lay but little claim to medical education . . . Knowing that improvements which would do honour to the most elevated human understandings are sometimes stumbled upon by men of more confined abilities; and that in medicine, as well as in every other circumstance in life, it is our duty to avail ourselves as much as possible, of all discoveries tending to the common benefit, I embraced every *just opportunity* of informing myself of facts, circumstances, and events, that either public fame, or more precise relations brought me.



THE

PRESENT METHOD

OF

INOCULATING

FOR THE

SMALL-POX.

To which are added,

Some EXPERIMENTS, inſtituted with a
View to diſcover the Effects of a ſimilar
Treatment in the Natural Small-Pox.

By THOMAS DIMSDALE, M.D.

LONDON:
Printed for W. OWEN, in Fleet-Street.
MDCCLXVII.

FIG. 2. TITLE-PAGE OF DIMSDALE'S FIRST BOOK.

Having tendered to the Suttons this somewhat backhanded compliment, he freely acknowledged that his own methods were based upon their practice, and protested against any attempt to rob them of "that share of private emolument which is their due."

Dimsdale's methods comprised the following measures. For nine or ten days before the operation his patients were enjoined to abstain from all animal food and fermented liquors, and to live on a low diet. During this time they were to take three doses of a "preparative" powder, composed of 8 grains of calomel, 8 grains of compound powder of crab's claws, and one-eighth part of a grain of tartar emetic at bedtime and a dose of Glauber's salts on each succeeding morning. The first dose of this powder was given at the commencement of the treatment, the second three or four days after, and the third about the eighth or ninth day. The matter for inoculation was taken from another recently inoculated person at the point of insertion; or from a ripe pustule if "in the natural way."

> An incision is made in that part of the arm where issues are usually placed, deep enough to pass through the scarf skin, and just to touch the skin itself, and in length as short as possible, not more than one-eighth of an inch. The little wound being then stretched open between the finger and thumb of the operator, the incision is moistened with the matter, by gently touching it with the flat side of the infected lancet. This operation is generally performed in both arms, and sometimes in two places in one arm, a little distant from each other . . . . Neither plaister, bandage, or covering is applied, or in any respect necessary.

Previously he had applied a piece of thread steeped in pus, to a long incision made in one or both arms. On the second day after inoculation he usually gave the following, either mixed with a little jelly or made into a pill: Calomel and compound powder of crab's claws, of each 3 grains, emetic tartar 0.1 grain; purging salts were given on subsequent days. His patients were directed to take moderate exercise in the open air, even in the coldest weather, and were to drink cold water. Even feverish patients were taken into the air, and Dimsdale would admit of few exceptions to this treatment.

In his book he reported at length 22 cases of inoculation and 7 cases of natural smallpox treated by this new method. The success of the "Present Method" was enormous, four editions being called for in the year of its first appearance. The seventh English edition was published in 1779, and there were several translations. Dimsdale's reputation as an inoculator was now established; his practice was greatly increased, many people of the highest quality coming to Hertford to be inoculated by him.

First Visit to Russia

In Russia at the close of the eighteenth century the ravages of the smallpox were greater than in any other country; it is said that in one year the number of persons who perished from the disease approached two million. It was entirely owing to the Empress Catherine that the practice of inoculation came to be introduced. The Semiramis of the North, who with all her faults, really seems to have had the welfare of the country at heart, had always taken the greatest interest in the disease. It has been suggested that Catherine decided to introduce inoculation under the influence of Voltaire, who was always an ardent supporter of the practice. This may be so, but the first reference to inoculation in the correspondence is in a letter from Catherine to Voltaire, dated December 6–17, 1768, in which she tells him of her inoculation by Dimsdale.

The immediate reason of Catherine's determination to undergo the operation is thus related by Dimsdale.

> A young lady, daughter to a nobleman of distinguished quality and fortune, extremely beautiful in her person, and not less amiable for the accomplishments of her mind was contracted to a nobleman of the highest rank and station in the Russian court. A few days before the time appointed for the nuptials, she was unfortunately seized with the small-pox, which proving a malignant kind, soon terminated in a loss that was universally lamented.

This melancholy event brought home to the entire court the danger in which the Empress and her son were exposed. Once the decision to be inoculated was taken the choice of an English doctor was inevitable. The reputation of the Suttons if not of Dimsdale must have reached Catherine. Besides the Russian monarchs had always shown a strong predilection for British doctors; and ever since 1557, in which year Dr. Ralph Standish, an M.D. of Cambridge, had gone out to Moscow as physician to the Tsar Ivan the Terrible, they had regularly imported their court physicians from England.[3]

The Russian ambassador in London, M. Pouschin, was directed to secure the services of an able physician who was experienced in the operation to go to St. Petersburg. When this order arrived the ambassador consulted Dr. John Fothergill, under whose care he then was, to whom he related the particulars of the Imperial message and requested his advice. The doctor immediately mentioned his friend Thomas Dimsdale whose celebrity as a writer and success as an inoculator were amply established.

FIG. 3. CATHERINE II (1729–1796), EMPRESS OF RUSSIA.

In the beginning of July, 1768, a courier was despatched to Dimsdale's house in Hertford, and as a result Dimsdale met M. Pouschin at Fothergill's house in Harpur Street, London. Although the ambassador used every blandishment to engage him in the service of the Empress the idea of going to Russia did not at first commend itself to Dimsdale. Being then fifty-six years of age, of an established reputation, possessed of an ample fortune, and moreover deeply attached to his large family, he thought that the task was one more acceptable to a younger man. He accordingly declined the undertaking and undertook to find a suitable substitute. While he was endeavoring to do this, he received a second invitation from M. Pouschin, who informed him that another courier had arrived from St. Petersburg.

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[3] The present writer has given some account of Dr. Ralph Standish and his successors at the Russian court in a papei on English physicians in Russia in the 16th and 17th centuries, *Proc. Roy. Soc. Med.*, 23: (Sect. Hist. Med.), 15–24, 1929.

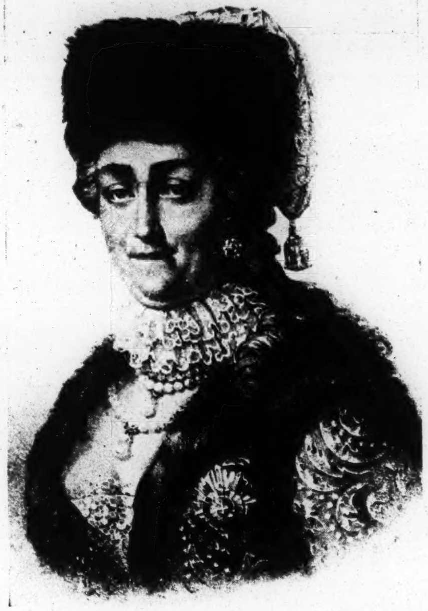

Fig. 4. Catherine II (1729–1796), Empress of Russia.

> . . . that he was an officer of distinction, employed only on extraordinary occasions, and had performed the journey with such uncommon expedition as to have been only sixteen days on his journey to London; from whence it was evident, that the Empress and Grand Duke were immediately interested in this application. I therefore embraced the proposal, and assured M. Pouschin that I would prepare for my journey with all possible expedition.

The question of remuneration he left entirely to the "gracious pleasure of her Imperial Majesty." Thereupon the Ambassador at once handed to him an order for £1000 for travelling expenses; and being allowed to take a travelling companion, his choice fell on his son Nathaniel, who was then a medical student at Edinburgh and well instructed in his father's method of inoculation.

The Dimsdales set out on July 28, 1768. After crossing to Amsterdam they travelled rapidly, day and night, in a comfortable chaise, under escort, by way of Berlin, Dantzig and Riga. They accomplished the journey from Amsterdam to St. Petersburg in exactly one month and arrived before the house which was being prepared for them was ready. A handsome apartment was therefore provided in the Millyonnaya (the Millionnaire Street) near the Palace, together with an elegant carriage and everything they could wish for at their command.

On the second day after his arrival Dimsdale waited on Count Panin, the Prime Minister, and the gracious reception accorded to him by this statesman made a lasting impression on the mind of the simple Quaker. On the following day the Dimsdales were presented to the Grand Duke Paul, were received with the utmost politeness and affability, and remained to dinner. That evening the Empress returned from Peterhof to the city and Dimsdale was invited to attend her Majesty at 10 o'clock on the day following at her summer palace. He was introduced to the Empress in the presence of Count Panin and Baron Cherkasoff, President of the College of Medicine in St. Petersburg, who had studied at Cambridge and spoke English perfectly. On that day Dimsdale dined with the Empress and about twelve of the nobility, and was greatly impressed by the "understanding and politeness of her Majesty, her extreme penetration, and the propriety of the questions she asked, relative to the practice and success of inoculation." "She is," he writes, "of all that ever I saw of her sex the most engaging. She has a way of pleasing, without appearing to have an art."

A large house, sumptuously appointed, was now set apart for him and his son, and was protected by soldiery for the sake of secrecy and isolation. For some time the Dimsdales were free to taste the life of the court and to observe the barbaric splendor of the palaces. He dined sometimes with the Empress and had a general invitation to the Grand Duke's court at all hours and meals, "the oftener the better." But all this time the words of Count Panin were burning into his brain: "To your skill and integrity will probably be submitted no less than the precious lives of two of the greatest personages in the world . . . " He was a prey to doubts and fears: "Many corroding cares disturb me, and embitter all this greatness which I am not able to enjoy."

At a second private interview the Empress informed him that she had decided to be inoculated with as little delay as possible. The conscientious Englishman requested to be allowed to have the assistance of the court physicians, to whom he proposed to communicate every detail of the operation and of his plan of treatment. But the Empress would not hear of such a consultation and gave her reasons as follows:

> You are come well recommended to me; the conversation I have had with you on this subject has been very satisfactory, and my confidence in you is increased; I have not the least doubt of your abilities and knowledge in this practice; it is impossible that my physicians can have much skill in this operation; they want experience; their interposition may tend to embarrass you, without the least probability of giving any useful assistance. My life is my own, and I shall with the utmost cheerfulness and confidence rely on your care alone. With regard to my constitution, you could receive no information from them. I have had, I thank God, so good a share of health that their advice never has been required; and you shall, from myself, receive every information that can be necessary. I have also to acquaint you, that it is my determination to be inoculated before the Grand Duke, and as soon as you judge it convenient; at the same time I desire that this may remain a secret business, and I enjoin you to let it be supposed that, for the present, all thoughts of my own inoculation are laid aside. The preparation of this great experiment on the Grand Duke will countenance your visits to the palace, and I desire to see you as often as it may be necessary, that you may become still better acquainted with what relates to my constitution, and also for adjusting the time, and other circumstances, of my own inoculation.

Dimsdale promised to obey her Majesty's wishes, but suggested that some experiments might first be made by inoculating several persons of her sex, age, and constitution. The Empress replied, "that if the practice had been novel, or the least doubt of the general success had remained, that precaution might be necessary; but as she was well satisfied in both particulars there would be no occasion for delay."

Measures were now taken for the introduction of inoculation into the Empire. A large house that had belonged to Baron Wolff, a famous banker, was purchased by the Empress and turned into a hospital. Dr. Schulenius, a physician of Livonia, who had successfully inoculated many persons in that province, was engaged as resident superintendent and had a Dr. Strenge as his assistant.

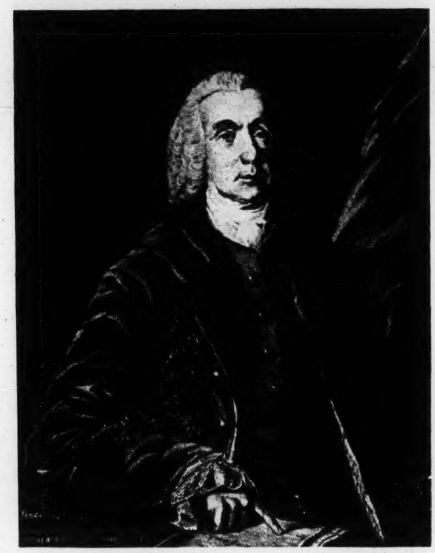

Fig. 5. Baron Dimsdale. From the Rare Line-engraving by Schmidt after Christineck, Made at St. Petersburg in 1769.

At the command of the Empress Dimsdale drew up "A Description of the Methods proposed for extending the Salutary Practice of Inoculation through the whole Russian Empire," in which he gave a circumstantial account of the Inoculation House he had built for his patients in England and of his method of conducting the operation. This tract was published in Russian at St. Petersburg in 1768, together with his account of the inoculation of the Empress and Grand Duke.

As Dimsdale decided to remain at the court in order to study the constitution of the Empress and Grand Duke, his son Nathaniel was placed in charge of the work at Wolff House and was entrusted with the preliminary operations which it had been decided after all to perform. Two cadets, named Basoff and Swieten, aged about fourteen years, were inoculated by Nathaniel Dimsdale, the matter being taken from the child of a poor man in the suburbs of St. Petersburg, who was "pretty full of a distinct kind of smallpox, which was then near the crisis." The anxiety with which Dimsdale awaited the result of this experiment may well be imagined.

> A journal of every material appearance was transmitted to me from my son, twice a day, and translated for the Empress's perusal. It was with great concern I received an account that Basoff, on the second day after inoculation, was seized with great sickness and vomitings, attended with other symptoms of fever; and, upon a strict inquiry, it was discovered that he had improperly overcharged his stomach with a quantity of dried fruits, which it was hoped might be the sole occasion of that disorder; but, whatever might be the cause, he continued ill of a high fever, accompanied with some alarming symptoms . . . This accident in the present instance embarrassed me greatly. My son's accounts were clear, and I could depend on his judgment; but unfortunately the fever continued, attended with dejection, which might probably increase by the patient's apprehensions; for although both these young gentlemen behaved with proper resolution when the matter was inserted, yet the practice being novel, I was told afterwards they considered themselves as victims devoted to a dangerous experiment.

On the sixth day the report was very unfavorable and Dimsdale determined to go himself to Wolff House to assist in the care of the patients; but first he was commanded to attend the Empress.

She said: "I do not like to see you so unhappy; tell me what is the matter." The doctor answered, "that the unfavorable accounts received of the patients at Wolff House distressed him greatly." "I am sorry for it," she replied, "but tell me truly, are you certain that the cadet's fever is not occasioned by the inoculation." I said, "most assuredly not, it began before the infection could disturb the habit, and continues with symptoms that never accompany inoculation at this period." "Then dismiss your fears," replied the Empress, "I make no doubt, with the blessing of God, he will be carried safe through his complaint, and all will end well . . . I am satisfied with your conduct, and you may depend on my protection and support; and whatever may be the event with this boy, it shall not alter my resolution, provided you remain in the good opinion of the propriety of my being inoculated."

Although the Empress herself had such confidence in Dimsdale's skill and integrity, she could not answer for her subjects. It is said that when the time came for her inoculation she had relays of post-horses prepared for him all along the line from St. Petersburg to the extremity of her dominions, that his flight might be instant and rapid in case of disaster.[4]

On the same evening a more favorable report came from Wolff House. The boy Basoff lost his fever and developed only two or three pustules; while Swieten's arm remained well, with such an appearance as indicated his having had the smallpox before.

Dimsdale then inoculated four more cadets and a young maid servant, the matter being taken from a poor man's child that had the natural smallpox. He describes the terror and distress of the child's parents, and explains that it arose from the popular belief prevailing in Russia that although the operation might be salutary to the inoculated, yet it produced certain death to the person from whom the matter was taken. This prejudice was finally overcome by the Empress and Grand Duke both permitting several persons to be inoculated from them.

To Dimsdale's consternation this experiment was wholly ineffectual, not 1 of the 5 cases developing in the usual way.

> The appearance on the arms was different from what I had ever experienced; for on the punctured part, almost immediately, arose a pimple, which soon became one large pustule, filled with yellow matter, very much resembling the smallpox completely matured. This continued to the seventh and eighth day, when the eruptive symptoms might in the common course be expected to appear. Not one of them however had any illness, nor did I then expect they would.

As Dr. Hingston Fox has pointed out, Dimsdale had he only known it was here on the verge of a discovery. "The virus of the disease had become in some way attenuated, and the resulting disorder was closely akin to *vaccinia*."[5] Dimsdale eventually came to the conclusion that these five persons had passed through the natural smallpox at some early period of their lives. He proposed that they should be inoculated a second time, in the old manner, with a long incision, in which lint moistened with matter was inserted and the wound covered with a plaster. The result was that not the least symptom of infection was produced.

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[4] In this Catherine showed greater tolerance than some of her predecessors. Under Ivan III, in 1485, a German physician had his throat cut for failing to cure a Tartar prince; while in 1490 another court physician was publicly executed because the Tsar's son inconsiderately died when under his care.

[5] Fox, R. H., "Dr. John Fothergill and his Friends." London, Macmillan, 1919, p. 89.

Fig. 6. Omai, the South Sea Islander Inoculated by Baron Dimsdale in 1774. (From the *London Magazine*, 1774.)

Inoculation of the Empress

The patience of the resolute Catherine was now at an end and Dimsdale received orders to prepare for her inoculation without any further delay. As a first step he selected and inoculated three healthy children to provide matter for the operation. During eight days before inoculation the Empress was advised to abstain from animal food at supper, and at dinner to eat only of such as was of easy digestion. On Saturday, October 11, 1768, the day before inoculation, she took .5 grains of the mercurial powder. About nine in the evening on October 12 orders arrived at Wolff House that Dimsdale and his son should immediately attend with some person from whom the infection might be taken.

> The child I had fixed upon as the most proper subject, and on whom the smallpox just began to appear, was then asleep; we wrapped him up in a pelisse, and conveyed him to the coach, into which we entered, and were immediately conveyed to a gate of the palace, next the Milione. We were conducted up a pair of back stairs, and were met by Baron Cherkasoff, who accompanied us to the Empress. The inoculation was soon performed, one puncture being made in each arm, after which my son returned back to Wolff House, with the child, and intimated to the family there (who were anxious to know what had been done) that I had inoculated the child of a nobleman.

It is said that the boy Markoff, from whom the virus was taken, was ennobled for his share in the operation, receiving the surname *Ospiennyi*, *ospa* signifying smallpox.

> All this being done in the night, no one knew of it, and I returned to my lodgings; but next morning privately slipped into one of Her Majesty's coaches, and with eight horses and three postillions was brought hither (Czarscoe Selo) where Her Majesty had arrived a few hours before. A pretence had been found for her going to this palace, and the inoculation was not known till the fifth day. She has had the smallpox in the most desirable manner: a moderate number of pustules, and complete maturation, which now, thank God, is over, and I find an inexpressible load of concern removed from my breast.

Dimsdale wrote a most minute account of the Empress's case. He gave her his mercurial powder on the fifth day, and a dose of Glauber's salts on the sixth, ninth and seventeenth days. She had a sore throat from the twelfth to the fourteenth day, but derived great benefit from a gargle of black currant jelly; she took solid food almost throughout. From the time of the inoculation to the commencement of the eruption the Empress walked every day for two or three hours in the open air and during the whole period she was most cheerful and never betrayed the least anxiety. She returned well to St. Petersburg on the twenty-first day.

The inoculation of the Grand Duke, which was to have been performed with matter taken from the Empress, had to be postponed on account of his contracting chickenpox, and occasioned a great deal of anxiety. Dimsdale requested the cooperation of Dr. Cruse and Mons. Fausadier, the Grand Duke's medical attendants, but they declined the responsibility, as did Dr. Vigor, an Englishman, physician to the maids of honor. They put however every bit of information at his disposal and Dimsdale was enabled to draw up a detailed memorandum of the Grand Duke's medical history. He came to the conclusion that there was no reason why the patient should not be inoculated, but advised a careful preparatory regimen of restricted diet, fresh air, mild purgatives and bark. The inoculation was performed on November 2, 1768, by one puncture on the right arm only; the matter was taken from the younger son of Mr. Briscorn, apothecary to the court. The Grand Duke had the disorder very favorably, and by November 22 was perfectly recovered.

This day the Empress and Grand Duke with the nobility and gentry attended a great thanksgiving service at the court chapel, and the Empress took this occasion to announce that she had created Dimsdale a Baron of the Empire. At the same time he was made a Councillor of State and appointed Body-physician to the Empress; he received a present of £10,000, £2000 for expenses, and miniatures of the Empress and Grand Duke, with an annuity of £500 to be paid him in England. He was also granted an augmentation of arms in the shape of a black wing of the Russian Eagle, in a gold shield, with the customary helmet, adorned with the Baron's coronet over the shield. Nathaniel Dimsdale was also created a Baron of the Empire and received a gold snuff-box set with diamonds. Well might the worthy physicians have exclaimed with Don Juan—

> Catherine was generous . . .

Dimsdale was invited to a shooting expedition in the country with Catherine and four of her noblemen. The day he says was spent most enchantingly. "Her Majesty shot nine moorfowl and I shot four . . . On these occasions," he adds, "the Empress commands all ceremony to be laid aside, and it pleases her to forget her greatness." Nevertheless one notices that the size of the prudent physician's "bag" bears a very proper relation to that of the Empress.

> I thank God, [he writes], that I have sense enough to know that my consequence is like the fly on the chariot wheel. Everyone is mad to be inoculated. It will be impossible for me to avoid more business than I can execute properly. Our patients consist of the first nobility. I have been slaving all day: all the patients go on well.

Dimsdale inoculated about 140 of the aristocracy in St. Petersburg, including the "favorite" Gregory Orloff and one of the archbishops. One old count, whose children his son had inoculated, gave him £500 in gold coin, with which, he says, he went limping out of the house.

Writing to Voltaire on December 6–17, 1768, Catherine says she has some great news:

> J'ai fait écrire en Angleterre pour avoir un inoculateur: le fameux docteur Dimsdale s'est résolu de passer en Russie. Il m'a inoculée le 12 octobre. Je n'ai pas été au lit un seul instant, et j'ai reçu du monde tous les jours. Je vais tout de suite faire inoculer mons fils unique. Le grand-maitre de l'artillerie, le comte Orloff, ce héros qui ressemble aux anciens Romains du beau temps de la république, qui en a le courage et la genérosité, doutant s'il avait eu cette maladie, est à présent entre les mains de notre Anglais, et le lendemain de l'opération il s'en alla à la chasse dans une très grande neige. Nombre de courtisans ont suivi son exemple, et beaucoup d'autres s'y préparent. Outre cela on inocule à présent à Pétersbourg dans trois maisons d'éducation et dans un hôpital établi sous les yeux de M. Dimsdale.

In his reply, dated February 26, 1769, Voltaire writes:

> Eh! madame, quelle leçon votre majesté impériale donne à nos petits-maitres français, à nos sages maîtres de Sorbonne, à nos Esculapes des écoles de médecine! Vous vous êtes fait inoculer avec moins d'appareil qu'une religieuse ne prend un lavement.

In another letter addressed to General Browne, the Governor of Livonia, Catherine says: "The honest and capable Dr. Dimsdale, your countryman, makes everybody here brave, and there is no house of any consequence in St. Petersburg where he has not several patients."

At the desire of the Empress Dimsdale and his son now set out for Moscow, where a number of the nobility were anxious to have their families inoculated. They travelled in one of the Empress's coaches, taking with them a little girl to furnish material. They travelled in the wake of the army then marching against the Turks and, owing to delays on the terrible winter roads, the journey took a week.

Having successfully inoculated more than fifty patients at Moscow and established an Inoculation Hospital, Dimsdale was ready to return to St. Petersburg when he contracted a severe pleurisy. He was attended by Baron Ashe and Dr. Dahl and was soon recovered sufficiently to be able to return to the capital by sledge. His business now being finished Dimsdale received permission to return to England and was just setting out when he was summoned to the palace to find the Empress stricken with a pleuritic fever. He again took up residence in the palace and was entrusted with complete charge.

> Her symptoms increased, and the pulse became now such, as I was convinced made it necessary that she should be bled; the Empress consented, and Mons. Rousselin, a very able, ingenious surgeon, in whom she reposes great confidence, was directed to take away eight ounces of blood; but before the operation, the Empress desired to see me again, and informed me that Mons. Rousselin had refused to bleed her, representing that as she was then in a sweat, the taking away blood would interrupt the perspiration, and be attended with danger. I thought, on the contrary, there was a necessity for instant bleeding, and she was pleased to

determine on being bled, from which she received an immediate relief.

Dimsdale confesses that this illness gave him the greatest anxiety, but the symptoms gradually abated and in about three weeks all danger was past.

Resisting all invitations to remain in Russia as body-physician to the Empress, Dimsdale and his son now took their leave and started on their return. As a further proof of her gratitude the Empress presented him with a priceless muff of Siberian blue fox, and he was attended to Riga by an officer commissioned to see that everything was provided for his accommodation and comfort.

On the return journey the Dimsdales were admitted to a private audience by Frederick the Great, King of Prussia, at Sans Souci.

RETURN TO ENGLAND

Dimsdale returned home in 1769, and in the same year (March 16, 1769) was elected a Fellow of the Royal Society. Soon after his return he became a partner in a banking business with Messrs. Archer and Hyde at No. 2 White Hart Court, Gracechurch Street, London, in succession to the old firm of Messrs. Amyand, Staples and Mercer, whose house was at the sign of the Golden Helmet and the Golden Bear in Cornhill.[6]

Dimsdale resided at Hertford in summer, and during the winter months at Red Lion Square, London. He continued to practice and his Inoculation House was much resorted to.

In August, 1774, Dimsdale inoculated Omai, a native of Ulaieta, the "gentle savage" of Cowper's "Task,"

> . . . whom no love of thee
> Or thine, but curiosity perhaps,
> Or else vain glory, prompted us to draw
> Forth from thy native bow'rs to show thee here.

Omai had been brought to England by Captain Tobias Furneaux who commanded H.M.S. Adventure in company with Captain Cook's ship the Resolution on the great navigator's second voyage round the world. He was the first South Sea Islander who had ever been seen in England, and as such naturally attracted a great deal of attention.

The inoculation was carried out at the command of King George II, and was doubtless intended as a mark of distinction. A correspondent of the *London Magazine* who saw Omai at Dimsdale's house at Hertford when he was under preparation for the operation has left this impression of him:

> In company he is easy and polite, and behaves so at table, handles his knife and fork well, and conducts himself in every respect with great decency, cleanliness, and void of any awkwardness. As he was confined to a certain regimen he eat only

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[6] By 1774 another Dimsdale had entered the firm, which was then known as Messrs. Dimsdale, Archer, Hyde, Dimsdale & Co. In 1776 the style became Archer, Hyde, Maude, Watts & Co., and in 1779 this firm amalgamated with the firm of Staples, Baron Dimsdale, John Dimsdale, and Josiah Barnard. In 1785 it became Baron Dimsdale, Sons, Barnard and Staples, which style it continued with one or two minor changes until 1814, when it became Barnard, Dimsdale and Dimsdale. During the 19th century the firm continued to change its partners and title with bewildering frequency and it is not necessary to follow its complicated history here. In 1876 Messrs. Dimsdale, Fowler, Barnard and Dimsdale were flourishing at 50, Cornhill, on the original site of the house known by the sign of the Golden Helmet and the Golden Bear. No. 50 Cornhill is now the site of a branch of the National Provincial Bank. (F. G. Hilton Price, "A Handbook of London Bankers," Lond., 1876, pp. 49–50.)

of pudding, potatoes, and other vegetables, though he is fond of meats.[7]

The inoculation was successful and by Thursday, August 25, 1774, the patient had quite recovered. On that day, accompanied by Mr. (afterwards Sir) Joseph Banks and Dr. Solander, he dined with the Royal Society at the Mitre Tavern in Fleet Street. Omai appears to have impressed everyone by his gentility, even Dr. Johnson (says Boswell):

> . . . was struck with the elegance of his behaviour, and accounted for it thus: Sir, he had passed his time, while in England, only in the best company; so that all that he had acquired of our manners was genteel. As a proof of this, Sir, Lord Mulgrave and he dined one day at Streatham; they sat with their backs to the light fronting me, so that I could not see distinctly: and there was so little of the savage in Omai, that I was afraid to speak to either, lest I should mistake one for the other.

In 1776 Dimsdale published "Thoughts on General and Partial Inoculation," the purpose of which was to show the dangers consequent upon inoculation carried on partially in the midst of communities from liability to take the disease by infection, and to prove that the only safe way of practicing inoculation in large towns is in hospitals instituted for that purpose alone and with precautions to prevent the spread of the disease among the uninfected. Notwithstanding the numbers inoculated in England it appeared from the Bills of Mortality that the deaths from smallpox, so far from diminishing, in the later periods, were sensibly increasing. This Dimsdale attributed to the spread of infection by means of unguarded inoculation. He laid this opinion before the public on account of a plan then in agitation for forming a dispensary in London for the purpose of inoculating the poor at their own homes. This laudable design he showed to be not without dangers in his "Observations on Dr. Lettsom's Letter to Sir Robert Barker, Bart., and George Stacpoole, Esq., on General Inoculation."[8]

Dimsdale's opposition to this plan brought him into conflict with Dr. John Coakley Lettsom, the chief promoter of the Dispensary for General Inoculation. The controversy gave rise to a great number of pamphlets—"Remarks," "Replies," "Examinations," etc., pouring from the press—and soon degenerated into an unseemly squabble. The wordy warfare between Dimsdale and Lettsom was surely (at that date) unique in one respect: *each writer committed his respective performance to the other in MS. for correction prior to publication.* Perhaps, as Dr. Hingston Fox suggests, the dignity of the Baron led him to pose as an authority—"the Great Inoculator," as Lettsom styled him, "who claimed an exclusive right to the theory and practice of inoculation." Dimsdale and Lettsom afterwards became reconciled, perhaps through the mediation of their mutual friend, Dr. John Fothergill, and on Dimsdale's death Lettsom wrote an appreciative obituary notice of him for the *European Magazine.*

Dimsdale's second wife Ann Iles died in 1779. He married about two years after this event Elizabeth, daughter of William Dimsdale, of

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[7] Genuine account of Omiah, a native of Otaheite, a new discovered island in the South Seas, lately brought over to England by Capt. Fourneaux. *London Magazine,* 43: 363–4, 1774. See also *Gentlemen's Magazine,* 44: 388, 1774.

[8] 8vo. London, 1778.

Bishop Stortford, who survived him.[9] In 1780 Dimsdale was elected a Member of Parliament for the borough of Hertford in the Tory interest.

SECOND VISIT TO RUSSIA

In 1781 he paid a second visit to Russia, in order to inoculate the two sons of the Grand Duke, Prince Alexander afterwards the Czar Alexander I, and his brother Constantine. In passing through Brussels, the Emperor Joseph, who was then in that city, received Dimsdale in audience and gave him a letter to convey to his old patient Catherine. A diary of this visit written by the Baron's third wife, who accompanied him, is still preserved in the family. The Dimsdales were received with the greatest cordiality and every honor was paid to them. The Baroness nursed the young princes until their recovery. They returned home loaded with presents, paying a visit to the Emperor Joseph at Vienna on their way.

In this same year (1781) Dimsdale published an English edition of his "Tracts on Inoculation, written and published at St. Petersburg in the Year 1768 . . . with Additional Observations." In this work he gave the results of his long experience of smallpox and inoculation, and somewhat modified his practice, particularly with regard to the directions for the use of cold air and cold water.

He printed privately in 1783 a "Tribute" to the memory of Dr. John Fothergill his "friend and adviser for more than forty years." About this time Dimsdale lost the sight of both eyes from cataracts, but a successful operation by the celebrated oculist Baron Wenzel happily restored his sight. In 1784 he was returned a second time to Parliament, and about this time he gave up all medical practice except for the relief of the poor. He resigned his seat in Parliament in 1790 in favor of his son Baron Nathaniel.[10]

ATTENDANCE ON THOMAS YOUNG

Catherine, Empress of all the Russias, was not the only illustrious patient Dimsdale had. In 1789 the worthy Baron attended the celebrated Thomas Young, the Wonder of his Age, in consultation with Dr. Richard Brocklesby, the young philosopher's uncle. Young was at this time sixteen years of age and was living with the family of a Mr. David Barclay, at Youngsbury, near Ware, in Hertfordshire. His studies were interrupted by a serious illness, which seemed to threaten consumption. Dean Peacock in his "Life of Young" says that Young was well-known to Dimsdale—they were near neighbors and both at one time members of the Society of Friends—and was much interested in his great attainments.[11] Young afterwards described the treatment of his own case in his "Treatise on Consumptive Diseases" (1815):

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[9] Elizabeth Dimsdale died at Hertford on October 16, 1812, in her eighty-first year.

[10] Nathaniel Dimsdale, the second son of the inoculator and his companion on the first journey to Russia, was born at the Priory, Hertford, on April 11, 1748. He graduated M.D. Edinburgh in 1771 with a thesis *De Dolore;* was an alderman of the borough of Hertford; served the office of mayor in 1790 and 1804; succeeded his father as Member of Parliament for the borough. He died unmarried on July 3, 1811, in his sixty-fourth year, and was buried in the parish church of St. Andrew in Hertford.

[11] Peacock, G., Life of Thomas Young, M.D., F.R.S. Lond., 1855, pp. 14, 15.

> I was myself bled twice only, by the direction of the elder Baron Dimsdale, and of my uncle Dr. Brocklesby . . . and was strictly confined to milk, buttermilk, eggs, and vegetables, with a very little weak broth, especially fish broth, which was little more than water in disguise; and I adhered to the direction for two years.

After his retirement Dimsdale passed some winters at Bath, but finally settled down at Hertford. Age was now gradually undermining his constitution, and on December 30, 1800, he died at Hertford, after an illness of about three weeks, in his eighty-ninth year. He was buried, by his own request, in the Friends' Burial Ground at Bishop Stortford.

Dimsdale is not one of the great figures in the history of medicine. He owed his fame, in the first place, to his book, "The Present Method of Inoculating," which appeared at a most opportune moment and, by establishing his reputation as an inoculator, gave him his great opportunity. His hazardous mission to Russia was carried out with brilliant success. In his relations with the Empress Catherine he showed great skill, tact and courage, and worthily upheld the best traditions of medicine. In his hands the operation of inoculation was brought to a high pitch; and it was unfortunate that all his energies were directed to the study and advocacy of a practice that was so soon to be discredited. The publication of Jenner's "Inquiry," in 1798, two years before the Baron's death, gave the death blow to the practice of inoculation, and much of his life-work was seen to have been in vain. There can be no doubt that Dimsdale was a remarkable man and a physician of great ability, who practiced medicine in a scientific spirit. Altogether, his is not the least notable name on the long roll of eminent Quaker physicians and surgeons.

RELICS AND MANUSCRIPTS

Several personal relics of Baron Dimsdale have been preserved. The patent of his Barony, embellished with the portrait of Catherine and other ornaments, is at Essendon, the family seat in Hertfordshire. Miniature portraits of the Imperial family and two coats, profusely ornamented with gold, that belonged to the Princes Alexander and Constantine, his patients in 1781, are still in the possession of the family. The diary of the second visit to Russia, written by the Baron's third wife, has already been mentioned. A lancet case that belonged to Dimsdale is preserved in the Museum of the Royal College of Surgeons (Historical Series, No. 11).

A great amount of manuscript material relating to the Dimsdales is preserved in the Friends' Reference Library, Friends' House, Euston Road, London.

ICONOGRAPHY

A miniature of Dimsdale was painted by Andrew Plimer in 1790, but was stolen from the National Portrait Gallery, in 1904, and never recovered. A good copy of this miniature by Henry Bone is in the hands of the family, and a photograph is at the Gallery.

The following engraved portraits are known:

1. Mezzotint (half-length), by and after T. Burke.
2. Stipple (half-length to right), by H. R. Cook. Plate to "Essex, Suffolk & Norfolk Characters," 1820.
3. Stipple (half-length to right), by W. Ridley. Plate to *European Magazine*, 1802.
4. Line (three-quarter length, seated), with Russian inscription, by Schmidt after Christineck.

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* This list does not include the tracts written by Dimsdale at St. Petersburg and published there in Russian translations; neither are all the pamphlets arising out of his disputes with Lettsom and others recorded.

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(I am greatly indebted to Dr. Arnold Chaplin, Harveian Librarian of the Royal College of Physicians, for his encouragement and help, and especially for permission to reproduce the rare engraved portraits of Dimsdale in his possession. I have also to thank Mr. H. M. Barlow, Secretary of the Royal College of Physicians, for permitting me to reproduce the Dimsdale bookplate in his collection of medical ex-libris.)

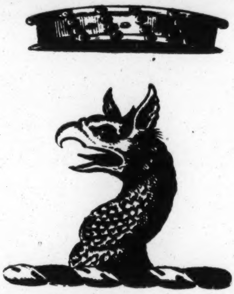

Fig. 7. Baron Dimsdale's Bookplate.

DAVID GRUBY

[1810–1898]

By THEODORE ROSENTHAL, M.D.

NEW YORK CITY

NO introduction should be necessary to a biography of David Grüby, one of the most brilliant biological investigators of the last century. It is especially interesting to dermatologists, inasmuch as Grüby was the man who discovered the true nature of all human ringworm affections, and with Berg and Schönlein, shares the honor of the discovery of the causes of thrush and favus, respectively. He also discovered and named the trypanosome, studied the Demodex folliculorum in man, investigated other animal parasites and wrote on various subjects in pathology and comparative anatomy.

Grüby was born on August 20, 1810 in a little village in South Hungary, in the midst of dire poverty. His parents had a little farm; the youngest son, David, did not like farming and it was intended to apprentice him to a watch- and spectacle-maker, but the boy was studiously inclined and insisted that he wished to become a doctor.

One fine morning his mother placed an apple and a large loaf of bread in his knapsack, his father bestowed a 50 kreutzer piece upon him and he went forth with their prayers, bent on his ambition to study medicine.

Working his way from village to village he finally reached Pest. Not being eligible for admission to the university, he used to listen to the lectures from the doorway. The professor, stirred by his desire to learn and concerned with the pranks and tricks with which the other students overwhelmed the poor boy, took an interest in him and permitted him to continue his studies. His ambitions were not satisfied, however, and soon after we find him in Vienna, where he lodged, curiously enough, in the Küss den Pfennig, an old inn which had sheltered Paracelsus, in the Adlergasse.

Grüby was so poor that he was obliged to club together with a comrade to buy candles for light. The two friends would study their lessons together and then repeat them to each other, first however, economically snuffing the candles. When the tax gatherers came, he frightened them away by generating chlorine. He also found time to worship at the shrine of Terpsichore, he was said to be the best waltzer in Vienna.

By practicing great economy, he made a microscope himself. Here one thinks of Leeuwenhoek and also of Spinoza, that other lens grinder of genius. Rokitansky, the foremost pathologist of Europe, singled out this ardent and patient pupil, and in 1835, induced him to publish his first paper, on the morphology of pus cells. His chief interests were in anatomy, physiology and pathological anatomy; he also studied ophthalmology.

Grüby received his doctorate both in medicine and ophthalmology on March 18, 1839, with a dissertation on the influence of water on the animal economy. Unfortunately this was not printed and has been lost to science.

By special permission of the famous surgeon Von Wattman, Grüby was allowed to assist at operations in the hospitals, *Operationszögling*. It is interesting to note here, that Hebra, before going to Skoda, worked with Von Wattman, and as his first publication wrote a 434 page book on major operations according to Von Wattman's principles. It is not known whether Hebra and Grüby ever knew each other personally.

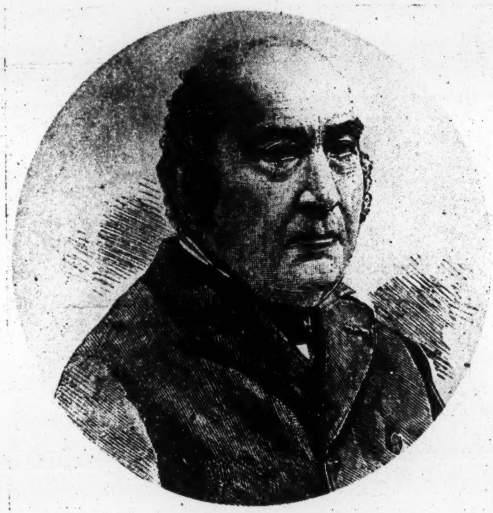

FIG. 1. DAVID GRÜBY (1810–1898).

By this time Grüby's work had attracted such attention that he was offered an extraordinary professorship at Vienna, but for personal reasons he refused it. He had recently made the acquaintance of the French surgeon Roux, the successor of Dupuytren, who, interested in Grüby's anatomical work and appreciative of his qualities, advised him to go to Paris.

After a short time spent in England, Grüby arrived in Paris in the latter part of 1840. He repaired immediately to the Hôpital Saint-Louis and the Salpêtrière, where the services of dermatology and neuropathology were then the foremost in the world. He also worked in the Foundling Asylum, where the pathological laboratory was put in his charge.

At that time Crémieux was in power and thanks to his help and support, Grüby was naturalized in 1848. Soon after his arrival in Paris, he opened a course in pathological anatomy as a means of earning a living. In a short time his renown spread and he attracted a group of brilliant pupils, included among whom were Claude Bernard, Flourens, Milne-Edwards and Magendie.

The courses, which he conducted for thirteen years, had a great success and were attended by many prominent medical men.

In a short while he gained a foothold among the Parisians, adapted himself to his surroundings, and familiarized himself with their habits. Soon paper followed paper to the Académie des Sciences, and before long he had created a new chapter in medicine, under the title of parasitic diseases. At first everyone laughed and poked fun at the presumptuous stranger who was running afoul of the humoral theories. What is this boaster going to do with his molds, they asked. He takes the head for a botanical garden, and the mouth for a hothouse!

In 1835 the mycotic nature of the epidemic disease of the silkworm, muscardin, was discovered in Milan by Balsamo and Bassi. This stimulated interest in fungous diseases, and on all sides investigators focussed their attention on maladies which might possibly be caused by these newly found pathogens. The mycotic nature of favus was discovered almost simultaneously in three countries.

In Berlin, in 1837, Robert Remak, famed for his discovery of the axis-cylinder and other anatomical researches, observed that favus crusts were made up of an aggregation of mycelial filaments, which distinguished them from other crusts. It did not occur to him, however, that they were the cause of the disease.

Working in Zurich, Schönlein in 1839 demonstrated the vegetable nature of the so-called dry pustules of favus.

Two schools of thought arose: Remak, Fuchs and others believed with Schönlein, but still others, Klenke, and Langenbeck among them, claimed to have seen mycelial filaments in other conditions beside favus, such as in lupus, and in divers other cutaneous affections. On account of these controversies the general medical public had taken little interest in these discoveries. It was quite startled therefore when it was rumored that David Grüby had presented a mémoire entitled "Sur une végétation qui constitue la vraie teigne" at the Académie des Sciences on July 12, 1841.

It may be said definitely that the modern study of fungous diseases dates from this point. Grüby is the man who discovered the true nature of all human ringworm affections.

His first mémoire, apart from its scientific value, has great historical importance. He began it with a clear exposition of the uncertainties and contradictions held by the various schools of opinion. He then proceeded to describe the favus crust. The account is so precise and exact that it is difficult to understand how Grüby was able to make such a minute description, lacking as he did the advantages of modern microscopic technique.

The first effect of this communication was to evoke many disclaimers of priority, and incidentally to acquaint the world with the previous works of Remak and Schönlein. Grüby contented himself with replying to the Académie that he had not known at all of Schönlein's work, and that it differed from his in description and conclusions, all of which was true.

The honor of naming the newly discovered parasite rests with Remak; he differentiated the organism from the genus oidium, created the genus achorion, and called it Achorion schönleinii.

Grüby next directed his attention to the study of thrush. He soon demonstrated that the membrane in this disease is not an inflammatory exudate, but was practically a pure culture of a parasitic body. A careful description of the organism was given in great detail. In the same year, 1842, a young Swedish physician, F. F. Berg, who had attended Grüby's courses in Paris described the same organism. It is quite probable that the discovery was made simultaneously, and independently. The organism was named in 1853 by

Charles Robin, who called it Oidium albicans.

Grüby now applied himself anew to a study of the affections of the hairy regions, and published within a period of three years, three papers on three different parasitic diseases.

The first of these dealt with a fungous affection of the chin, and was called "Sur une espèce de mentagre contagieuse resultant du développement d'un nouveau cryptogame dans la racine des poils de la barbe de l'homme."*

This paper has the same fault that characterized his others; namely, his clinical descriptions are so succinct and abbreviated that the reader has trouble in recognizing the clinical entity in question. However, these faults do not detract in the least from the micrographic value of the work. The description of the parasite is exact, and leaves no doubt of its identity. It is of the type known today as Trichophyton ectothrix.

All of Grüby's papers show him to have been an expert mycologist but only a mediocre dermatologist. He should not have been content with describing new parasites; the glory of discovering new organisms and of initiating new experimental doctrines would have been greater had he indicated in what morbid conditions he had found them, so that other investigators could have easily confirmed his work. Medical men of his time recognized inflammations of the bearded areas, but the organism that Grüby had just described remained confused among them. Those who accepted his description wished to find his fungus in every affection of that region, while the scoffers who failed to find it in a single case took delight in denying the truth of his statements.

The confusion was even worse with the paper that followed. A brief account of the situation with regard to ringworm of the scalp at that time was as follows: a poor description and a good plate had been given by Willan and Bateman in England, and an excellent description with a mediocre plate by Mahon, which was followed by that of Alibert. Apparently the diagnosis of ringworm of the scalp in France from 1830–1840 was made only by the brothers Mahon, laymen. To add to the chaos one must realize that, both in French and English there was a multiplicity of names for each clinical type of disorder. In 1840 Cazenave gave a masterly description of the condition, and differentiated for the first time between ringworm of the scalp and alopecia areata.

Grüby's paper on the same subject was almost contemporary with Cazenave's book. Cazenave was one of the few men of the time who had an exact clinical knowledge of ringworm of the scalp. In his following paper, Grüby tried to prove the mycotic origin of diseases which were still poorly understood by the rest of the world, and precise description of all clinical facts was imperative; hence it is not to be wondered that many mistakes resulted.

The next paper was called "Recherches sur la nature, le siège et le développement du Porrigo Decalvans ou Phyto-Alopecie."*

Porrigo decalvans (really alopecia areata) was at that time only a definition promulgated by Bateman, and according to him was characterized by areas of apparently normal skin, devoid of hair. Grüby's clinical description is entirely different. The first error in Grüby's paper was, therefore, the fact that not only did he not describe clearly the disease in which he was about to discover a new parasite, so that it was impossible to recognize, but he even gave it the name of another disease.

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* *Compt. rend. Acad. de sc.*, vol. 15.

* *Compt. rend. Acad. de sc.*, Aug. 11, 1843.

This error, which all dermatologists should have immediately recognized, was noted by no one. Another serious fault is the fact that Grüby, throughout his paper speaks of "individuals," without once stating that they were all children.

But when Grüby, leaving the field of clinical medicine begins his microscopic description, all his mastery is evident. Indeed, Sabouraud remarks that when he rediscovered the parasite in 1892, without knowing that it had been described before, his account was far from equalling that of Grüby fifty years before.

Grüby called the organism which he had discovered the Microsporon audouini, after the celebrated zoologist Jean Victor Audouin.

Ten months later Grüby published a paper on a subject analogous to his preceding one, entitled "Récherches sur les cryptogames qui constituent la maladie contagieuse du cuir chevelu décrite sous le nom de teigne tondante (Mahon) herpès tonsurans (Cazenave)."* This paper is his best; it is interesting to note that the technical value of each increases in the order of their appearance. The organism described here is trichophyton endothrix.

In 1845 the work of Malmsten appeared on the same subject. This was inferior to Grüby's paper, but better known because in it he named the new organism, calling it Trichophyton tonsurans. Later Hardy created the neologism trichophytosis.

Great discussions and acrimonious disputes arose following the discoveries of Grüby. Bazin was the first, at Saint-Louis, to accept the doctrine of the parasitic nature of the ringworm diseases. He was followed by Hardy, Devergie and others.

Grüby's work means a great deal; the discovery of the parasitic nature of these dermatoses marks the beginning of a new epoch, not only for dermatology but for medicine itself.

In the same period, 1840–1845, the indefatigable and versatile Grüby busied himself with problems in comparative anatomy, studied the Demodex folliculorum which Henle had discovered in 1841, and discovered in the blood of the frog a corkscrew like organism which he called trypanosome. He also made investigations into the anatomy and physiology of the chyle apparatus of suckling animals, the venous system of frogs, the purple-bearing organ of shellfish, and an epidemic disease of potatoes.

In 1847–1848 he experimented with the action of ether and chloroform on animals.

Although Grüby never published it, it is interesting to learn that in 1848 he was the first to study a streptothrix-like fungus found in a concretion in a tear duct, which was subsequently described by Albrecht von Graefe in 1853.

At about this time he gave up his investigative work and began to devote himself to the practice of medicine.

In 1854 Grüby received permission to practice in France, and gave himself whole-heartedly to his patients. Many have regretted his devotion to his practice. The abandonment of his investigative work involves a most profound psychological change which it is impossible to fathom. What would this man have accomplished had he continued his scientific work?

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* *Compt. rend. Acad. de sc.*, April 1, 1844.

He soon became a popular and fashionable physician, famed for the originality of his prescriptions and his advice. For decades he counted artists, musicians, and literateurs among his patients. Among them were Chopin, Lamartine, Heine, George Sand, Liszt, and Alphonse Daudet. Max Nordau, who also was treated by him, called him a "Dervish Healer." Diplomats among his clientèle were Emile Ollivier, and Count Eckstaedt, as were also Alexandre Dumas père et fils, and Ambroise Thomas, composer of "Mignon."

Grüby, in the course of his practice, made use of suggestion therapy to a large extent, and apparently accomplished very real results. Among his patients were many suffering from psychoneuroses and gastric complaints and in these particularly he had many brilliant cures.

His faithful secretary, LeLeu, gives us a picture of his apartment: a large spacious room filled with exotic plants. Alongside of beautiful microscopic preparations lie brochures and pamphlets, while scattered in heaps all about are old journals, occupying tables and chairs. Here and there were morsels of food neglected by the master. On receiving a patient, it was often necessary to clear two chairs of the accumulated books and papers before they could be seated.

Grüby was short and somewhat stocky. He wore his hair long, combed back. With his soft deep eyes, his smooth face, his large ironic mouth and good natured nose, his superb classic profile was one that could not be forgotten. He spoke French poorly, with a German accent, and was brief and abrupt in his speech. He never married.

His handwriting was execrable; at the end of a consultation he would often have the patient write the presciption at his dictation. His manner with patients was curt and dictatorial, and he would brook no interference with his regimens. If a patient was too prolix, he would pretend to fall asleep. When the luckless patient complained he would ask, "What else could I do? Your words are so much gas!"

He was called once to see a fashionable lady who was suffering from a paralysis of the legs which resisted all treatment. "Take care of my tapestry," she cautioned the servants who were bringing lamps to light the room. "It would be a misfortune should it be stained with oil." Hearing this, Grüby took the oil container and pretended to examine it. He slyly allowed a drop to fall near the tapestry, the patient exclaimed and with one leap left her chair and rescued her precious tapestry.

At another time, he was advising a highly nervous woman, with a gastric complaint, whom everyone believed to be seriously ill. "You will rise tomorrow at 8:30," commanded Grüby, "and drink a cup of tea. Then you must walk the Avenue du Bois, and at the end of your walk, drink a glass of water. Back home at 10 A.M. you will take a second cup of tea. The important thing is that the glass of water must be between the two cups of tea."

One day the poor woman awoke late. As it was time for the glass of water, she omitted the first cup of tea. After a while she experienced gastric pain and distress and Grüby was called. "Very grave," said he. "Happily there is a way of putting the water in its proper place. The cup of tea that you did not take from above (by mouth) you will administer to yourself from below, and thus reestablish the equilibrium."

Edmond Goncourt, in the "Journal des mémoires de la vie litteraire," relates that Grüby was called to see Heinrich Heine at the onset of his illness and believed that his ocular affection was due to a disease of the spinal cord. Ultimately a diagnosis of tabes was made. Ten years later Grüby was again called to the bedside of the lame and blind poet. To Grüby's comforting word that he would still live long, Heine retorted "Don't tell my wife." In the course of the neurological examination, when asked whether he could whistle, he said, "Unfortunately not loud enough to hiss down the plays of Scribe."

Alexandre Dumas *père*, that hard worker, broken down by literary overexertions and lack of exercise, was told, "Tomorrow morning leave the house at 6 A.M. and buy three apples at a certain fruiterer. Eat the first at the Arc de Triomphe, the second at the Quai d'Orsay and the third at the Place de la Madeleine. Then return home on foot." It is unnecessary to state that Dumas was quite well at the end of two weeks of such a regime.

Grüby was very careless about financial matters. His fee was fixed, ten francs, regardless of the time of day or the station in life of the patient. Checks and accounts were scattered indiscriminately about his quarters.

Several years before the war in 1870, Grüby had installed an astronomical and meteorological observatory in a house in the Montmartre, in the Rue Lépic. During the war, he placed it at the disposal of the military authorities, who found it of great service. He subscribed heavily to the funds for the relief of the wounded, gave 10,000 francs to form a company of Franc-Tireurs in his arrondissement, and donated a plot of land for a parade ground for drilling troops.

Later he himself attended an emergency dressing station. He endeavored to improve on the defective methods for the evacuation of the sick and wounded to the rear, and even devised a number of appliances, such as a wheeled litter, a movable bed, wheelchairs and a mobile sterilizer for disinfecting garments.

In the last twenty years of his life, he interested himself in many philanthropic and educational works, such as the Free Loan Society, Association des Dames Françaises, and the National Topographic Association and in charitable deeds among his Austro-Hungarian countrymen.

The Republic was tardy in recognizing his services. It was on July 14, 1890, that he was made a Chevalier of the Legion of Honor.

For some years before he died, his popularity waned and his practice diminished. One day he confined himself to his room and ordered his servants not to disturb him. After two days of silence, the door was forced November 14, 1898, and Grüby was found dead, lying quietly as if he slept.

At his death, the German medical literature ignored him completely; only in Vienna the newspapers commented on it, and they spoke of him as a Frenchman. In France, his eccentric genius was accorded better recognition. His secretary wrote a volume of reminiscences: "Le Docteur Grüby, Notes et Souvenirs,"[3] by L. LeLeu;

while a very fine appreciation by Raphael Blanchard appeared soon after his death.[1]

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THE LIFE AND TIMES OF DR. WILLIAM HARVEY

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HAMPSTEAD, ENGLAND

PART III*

V. WILLIAM HARVEY (CONTINUED)

The evidence we have of Harvey's personal appearance, habits, character, opinions and reputation among his contemporaries, is obtained partly from his own writings, partly from notices of him or stories told of him by others, and partly from the official documents of St. Bartholomew's Hospital, and the College of Physicians, the two bodies with which he was connected in his professional life.

He was a small dark man, with black hair and eyes, quick and restless in his movements, and quick also in his temper. "He was, as all the rest of the brothers, very cholerique," says Aubrey, and he notes that he had a habit of playing with his dagger and of half drawing it when he was excited. Arundel writes to Petty (Oct. 28, 1636), "I hope I shall see the little perpetual movement called Dr. Hervye here yet before my going." But in visiting patients he kept up some little state, riding with a footcloth on his horse, and a man following on foot, "very decent" as Aubrey puts it, while he laments that these dignified ways have disappeared.

The best portraits of him are that at the College of Physicians, attributed to Jansen, the Ditchingham portrait which is said to have come from the collection of Dr. Mead, one which was bought by Dr. C. M. Wilson at the Surrenden Dering sale, in 1928, which seems to me to be a replica of that at Ditchingham, though the figure is only a half length, and lastly, the engraving by Faithorne, in the form of a bust, which is the frontispiece of the 1653 English version of the "De Generatione." All of them show a serious, not to say rather a sad face, with a high forehead, fine large eyes under well marked brows, slightly knitted, a prominent and rather delicate nose, and a thin, somewhat stern mouth, partially concealed by the moustache. The face is a rather round oval, and in the hollows under the cheekbones, and the lines round the mouth and down the cheeks, bears the usual signs of age. The hair, beautifully treated in the engraving, hangs on to the collar, and there is a short moustache and a short pointed beard. The collar is wide and plain. It is a rather beautiful face on the whole, the engraving giving the finest head of all, and the portraits are so much alike that we can be in no doubt that they faithfully represent Harvey. The College had the Jansen portrait at the time of the fire of London, and if it is by Jansen, it must have been painted before 1643, when Jansen left England. But how the College came to own it is not recorded.

Harvey was first of all a hard-working doctor, earning his living by practicing surgery and obstetrics as well as medicine, as physicians, even when Fellows of the College, then did. His interest in obstetrics is shown by many clinical observations which occur in the "De Generatione," by his statement that he invented some instruments, especially for treatment of diseases of the womb, and by one or two stories told by Willoughby and others[26] which are evidence of it. Similarly with surgery. He bequeathed his surgical instruments to Scarborough, and Aubrey tells us of his operating for cancer of the breast when he must have been over seventy years of age. The earliest mention that I have found of his medical practice is in letters written in 1616 by the Dowager Countess of Arundel to the Earl. The first is to tell him that Charles, one of the boys, who had been left in her care, is feverish. The next runs, "I assure sweetheart the poor child is exceeding evil. I beseach you send with speed the best doctor that may be had. I fear the child very much." The next reports the death. "Mr. Doctor Harvey is of the same opinion that my Gilford neighbour, Mr. Raner, was to-day, when he did purseve what he did avoyde, which is yt some continued impostum caused his end" (*Hist. mss. Comm. Coke, mss.*).

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He attended Philippa Hobart, daughter of the Earl of Leicester, in 1620 (*Sidney Papers*) and James Howell in 1621 (*Epp. Hoellianae*). He attended Bacon for whom he had a great admiration ("doctissimi Verulamii nostri." De Generatione Chap. XXIV), though he did not think much, it seems, of Bacon's rules for induction, and also Bacon's successor, Lord Keeper Williams, Bishop of Lincoln, whose biographer, Hackett, tells us that in 1624 the bishop was rescued from death by "that great Secretary of Nature, Dr. William Harvey." A few others of his patients such as Sir William Sandys and Sir Thomas Thynne are known to us by certificates which he wrote on their behalf. He told Aubrey that after the publication of the "De Motu" he "fell mightily in practice," but he probably regained it, for Aubrey goes on, "his practise was not very great towards his later end; he declined it unlesse to a special friend, e.g., my lady Howland," or "my she cousin Montague," Sir William Montague's wife. It was in 1654 or 1655 that Aubrey saw him going his professional rounds on horseback.

At that time physicians kept their prescriptions secret, and looked upon them as their private property. Harvey made strict rules at St. Bartholomew's that his own prescriptions should be kept under lock and key, but that the surgeons, who were not allowed to prescribe internal remedies, should be made to reveal theirs. Practitioners bought the prescriptions of famous physicians when they could, but Aubrey says:

> All his profession would allow him to be an excellent anatomist, but I never heard of any that admired his therapeutique way. I know severall practisers in London that would not have given 3d. for one of his bills [prescriptions] and that a man could hardly tell by one of his bills what he did aime at.

This probably means that Harvey, like many other good physicians, was not a great believer in drugs, and trusted more to Nature than most of his colleagues.

He made mistakes as we all do. One of them is preserved by a report from the Barber Surgeons. A servant of a Mr. Kynnersley, very likely one of the family of Daniel's wife, fractured her skull, and Harvey did not recognize the injury.

Beside his ordinary practice he held Court appointments.

There were usually six Physicians in Ordinary, of whom two were Physicians to the Household. Harvey was appointed to the former in 1630, and to the latter in 1631, on the death of Poe, who was the Senior Physician to the Household, having held office since 1609. Poe's junior, Betoun, who had been appointed in 1628 or 1629, now became Harvey's senior. Betoun died in 1639 and Harvey then succeeded to his place. The Regis Medici Ordinarii are named in a list of the College of Physicians dated December, 1630. They then were Sir Theod. Mayerne, Sir Henry Atkins, Sir William Paddy, Sir Matthew Lister, Harvey, Poe (who died shortly afterwards), Betoun and Cademan, who was Physician to the Queen. Atkins and Paddy both died in 1634 and in 1635 the names were Mayerne, Lister, Betoun, Harvey, Craige (the younger), Ramsay, Grent and Cademan.

It was probably as Physician to the Household that Harvey obtained quarters at the Palace and Commons from the Royal Table. His salary was £300.

He was evidently trusted by the King for he attended him in his journeys and followed him to the war. But the most famous physician of the day was undoubtedly Sir Theodore Turquet de Mayerne. He came to England first in 1606 when he was made Physician to the Queen, but returned to France and was again invited to England by James in 1610 after the murder of Henry IV, when he was appointed physician to the King and Queen. In 1612 he attended Henry, Prince of Wales, in his last illness, of which he has written an excellent account. (The MS. is in the College Library. It has been printed by Sir N. Moore.)

He remained in high favor both with James, who gave him a pension or salary of £675 a year, in 1619, and Charles, who added another £100 to it, and he went down to see the Queen at Exeter in 1644, before her confinement. The Queen, writing to him, signs herself "votre bien bonne maistresse et amie," and Charles writes "Mayerne, Pour l'amour de Dieu, allez trouver ma femme."

On May 19, 1645, he was paid the greatest compliment that Parliament has ever, I suppose, paid to a medical man. The Lords sent down a message to the Commons:

> The Lords desire that the House of Commons would join with them in expressing their esteem of a man whose extraordinary abilities would make him welcome in any part of Christendom; and as he is singular for his knowledge in his profession, so he may be singular in being by the favour of the House exempted from all payments which others are subject unto: it being but a continuation of that favour which he hath enjoyed for about thirty years without interruption.

The House of Commons agreed by sixty-nine to sixty-six. Mayerne died in 1655. In 1642 or 1643 Dorothy Osborne knew the Mayernes so intimately that Sir Theodore used to call her "daughter." His son and his daughter both died not long afterwards.[28]

It is interesting to compare the description given of a physician in different ages by various authors. In Chaucer the Doctour is not an amiable character, for though Chaucer grants him skill, he makes him covetous:

He was a verrey parfight practisour.
The cause i-knowe, and of his harm the roote,
Anon he yaf the syke man his bote [remedy].
Ful redy hadde he his apotecaries
To send him dragges, and his letuaries,

For eche of hem made othur for to wynne;
Here frendschipe was not newe to begynne.

……

Of his diete mesurable was he,
For it was of no superfluité,
But of gret norisching and digestible.
His studie was but litel on the Bible.
In sangwyn and in pers he clad was al
Lyned with taffata and with sendal.
And yit he was but esy in dispence;
He kepte that he wan in pestilence.
For gold in phisik is a cordial,
Therefore he lovede gold in special.

Earle, Falkland's friend, in his Microcosmography, (1628) satirizes "A meere dull Physician."

> He is distinguisht from an Empericke [a quack] by a round velvet cap and Doctor's gowne [the present academic dress] . . . He is sworne to Galen and Hippocrates, as University men to their statutes, though they never saw them, and his discourse is all Aphorismes, though his reading be onely Alexis of Piemont, or the *Regiment of Health*. The best cure hee has done is upon his own purse, which from a leane sicklinesse he hath made lusty and in flesh. His learning consists much in reckoning up the hard names of diseases, and the superscriptions of Gally-Pots in his Apothecarie's Shoppe, which are rankt in his shelves, and the Doctor's memory. If he have beene but a by-stander at some desperate recovery, hee is slandered with it, though he be guiltlesse; and this breeds his reputation, and that his Practice; for his skill is meerly opinion . . . If he see you himselfe, his presence is the worst visitation: for if he cannot heale your sicknesse, he will bee sure to help it.
>
> He tells you your maladie in Greeke, though it be but a cold, or headache: which by good endeavour and diligence he may bring to some moment indeed; his most unfaithfull act is, that he leaves a man gasping, and his pretence is, death and he have a quarrell and must not meete; but his feare is lest the carkasse should bleed.*

His description of a surgeon is equally drastic. Both are, of course, caricatures, but the refusal to continue attendance in a hopeless case is mentioned also by Bacon ("Advancement of Learning," 1605):

> But the physicians contrariwise do make a kind of scruple and religion to stay with the patient after the disease is deplored [considered hopeless]; whereas in my judgment they ought both to inquire the skill, and to give the attendances for the facilitating and assuaging of the pains and agonies of death.

There is, however, no description by a lay author which contains truer understanding or shrewder criticism of the difficulties of medical practice than the pages which precede this sentence in Bacon's book. He speaks of the extreme intricacy of the human system,

> . . . which hath made it easy to distemper. So then the subject being so variable hath made the art by consequence more conjectural; and the art being conjectural hath made so much the more place to be left for imposture.
>
> A lawyer is judged by his pleading, not by the issue of the cause; a captain by his navigation, not by the fortune of the voyage]; but the physician . . . hath no particular acts demonstrative of his ability, but is judged most by the event; which is ever but as it is taken: for who can tell, if a patient die or recover, . . . whether it be art or accident? And therefore many times the imposter is prized, and the man of virtue taxed. Nay, we see the weakness and credulity of men is such, as they will often prefer a mountebank or witch before a learned physician . . .
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> And therefore I cannot much blame physicians, that they use commonly to

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* In the presence of the murderer.

intend some other art or practice, which they fancy more than their profession. For you shall have of them antiquaries, poets, humanists, statesmen, merchants, divines, and in every of these better seen than in their profession; and no doubt upon this ground, that they find that mediocrity and excellence in their art maketh no difference in profit or reputation towards their fortune . . .

Medicine is a science, which hath been, as we said, more professed than laboured, and yet more laboured than advanced, the labour having been, in my judgment, rather in circle than in progression. The deficiencies which I think good to note, being a few of many, and those such as are of a more open and manifest nature, I will enumerate and not place.

The first is the discontinuance of the ancient and serious diligence of Hippocrates, which used to set down a narrative of the special cases of his patients, and how they proceeded, and how they were judged by recovery or death, [which Bacon compares to the work of lawyers], who are careful to report new cases and decisions for the direction of future judgment.

Anatomy should have been far more exactly pursued by vivisection of animals, and morbid anatomy by the dissection of those dead of disease, and notes of the appearances, "with reference to the diseases and symptoms which resulted from them." Diseases themselves are not described with sufficient accuracy, and there has been no exact inquiry into the action of drugs.

Such a piece of criticism as this would alone be enough to prove how far the mind of Bacon was in advance of his age. Both Harvey and Mayerne took up "the serious practice of Hippocrates," and wrote up the symptoms and post-mortem appearances of cases. Harvey in his letters to Riolan mentions that he meant to publish such a work but he never did.

In his dealings with St. Bartholomew's and with the College, Harvey showed himself a good man of business. He drew up rules for the conduct of the Hospital, which are thoroughly sensible, though the position assigned to the surgeons would now be ridiculous. At the College it was the same. He was on nearly all Committees, and was often chosen for special work, such as canvassing the Cambridge graduates, explaining things to the Archbishop, or addressing the apothecaries. He took the lead also in dealing with the Plague, in 1630, and was sent to explain the difficulties to the King. Nor for all his generosity do we find him neglecting to assert his rights, for he twice (in 1640 and 1647) took steps to sue the heirs of Lord Lumley for the arrears of his salary. The point is worth noting since Aubrey says that he was careless about such matters.

But the master passion of Harvey's life was not medical practice but scientific discovery. He set himself to examine the structure of the human body and the functions of its parts, and became the father of physiology. With this aim he extended his researches to every species of living things that he could obtain. Shrimps, lice, wasps, cassowaries, ostriches, fishes, snakes, sheep, dogs, cats, deer, and his wife's favorite parrot, all were fish that came into Harvey's net, and all were utilized to throw light on the problems that he studied. Nor was this all. He was a born collector. In his journey down the Rhine he made Arundel really angry by seeking for plants and other natural curiosities at the risk of his life. If he had been cast away on a desert island his first leisure would have been used to found a museum.

And in all this, his simple and disinterested character is as remarkable as his attainments. "Honest little Hervey," the Earl called him, and he thoroughly deserved it.

Of his behavior in this respect there is abundant evidence in his discourses and in such of his letters as remain. There never has been a more courteous disputant, and we cannot estimate this quality at its proper value until we read the writings of his opponents, Parisanus, Riolan, the great Riolan himself, and the egregious Primrose. It was the common fashion then to abuse your opponent, and no one was more scurrilous in controversy than Harvey's great contemporary, Milton. The politeness and gentleness of Harvey, his repeated declaration that he relies upon reason and experience alone, and his constant refusal to take offence or to give it, are a much greater testimonial to his character than they would be now, when controversy is carried on with decency and good manners. He was not only far superior to the level of his time, but he serves for a model to us even now. A man of whom that can be said must have been in a quiet way a very fine little gentleman.

Aubrey says that "he understood Greek and Latin pretty well, but was no critique, and he wrote very bad Latin." That is quite true. He was widely read in the medical authors current at that time, and he was a great admirer of Aristotle. The "De Generatione" is stuffed with quotations from Aristotle's biological and metaphysical works. Sir Norman Moore says that he knew Aristotle only through Latin translations. I cannot understand why such a statement should be made. Harvey quotes, though in Latin, Aristotle's own words, he gives the various Greek terms used by authors including Aristotle for the parts of an egg; he in one place calls himself a "periphrastes" of Aristotle, and he occasionally uses Greek words in the course of his own argument. There cannot be any doubt that he knew Aristotle in the original, and knew him very well. Several Greek editions of Aristotle's biological works had been printed by 1619.

His Latin style is bad, and in many places he is obscure. In addition, he was a shockingly bad proof corrector, and the first edition of the "De Motu" (Frankfurt) is full of errors. Later editions published abroad and in this country corrected and emended him without scruple, and sometimes perverted his meaning. I have collated them and can state that by far the best is that published by the College of Physicians in 1766.* This carelessness is excusable perhaps in a work printed abroad, whence it must have been difficult to get proofs for correction. But the same fault is found, though less often, even in the letters to Riolan published at Cambridge in 1648, which he must have had full leisure to correct. One sentence makes, as he left it, such nonsense that translators sometimes leave it out. Foreign reprints give what must certainly be the correct text of the passage.

The Latin of the "De Generatione" is so much better than that of the "De Motu" that Aubrey's statement that Ent translated it into Latin is at first sight plausible. It is probably, however, untrue. The English version was published two years later, and if the two are closely compared a few mistranslations will be found which are easy to explain if the translation was from Latin into English but not if it had been the reverse. On the other hand Harvey wrote his first book in Latin, in which he was very fluent, though not very correct, and if Ent had an English original, other than the English version of 1653, it is difficult to see why he should not have published it.* The probability is that the original was in Latin, but that Ent corrected it and greatly improved the style.

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* It was edited by Akenside, and Lawrence wrote the Latin Life that precedes the text.

It happens that the first English version of the "De Motu" was published in 1653 also. It has been reproduced by the Nonesuch Press; but it was not worth it. The writer did not know anatomy, could not read Latin, and could not write English.

Harvey quotes beside ancient and medieval medical writers, Aristotle, Virgil, Terence, Lucretius, Seneca, Pliny, Columella and Varro, but I have not met with a single reference to the writings of his own time. He mixed with learned men and his Master, the King, loved the drama and was a great admirer of Shakespeare. Milton ("Eikonoklastes") tells us that he kept a Shakespeare in his closet. It may be that Harvey's silence is merely accidental, but my impression is that he was one of those men who are so entirely occupied with the facts of Nature as to have little interest in the fancies of Art. In some minds the passion for scientific knowledge is so great that it ousts the love of beauty, and I am inclined to think that Harvey was of that temper. Even his love of Virgil may have been in great measure due to Virgil's knowledge of, and love for, Nature.

Harvey in the "De Generatione" mentions names of books he intended to write, "Observationes Medicinales," probably the same as the book on clinical cases with their morbid anatomy of which he writes to Riolan, some more general work on Generation, "Cum universim de omnium animalium Generatione agetur," and "De Physiologia." He seems to have had the MS. of the first by him in 1648, but it was never published.

We know little of Harvey's friends. To begin with the highest it is clear that he interested the King. He several times speaks of specimens that he showed the King, "Clementissimo meo Domino," as he says in one place, "qui que et ipse harum rerum indagine delectabatur," in another, including the case of the young Montgomery with a large hole in his chest, through which the heart could be seen and felt. Sometimes he even mentions the Queen and others as spectators. All the Stuarts had brains, and Charles was far the most cultivated prince, and one of the most cultivated men, in all Europe. His choice of Harvey to go to Aberdeen, if, as seems possible, it was to report on the University, and later to be Warden of Merton, shows that he put a value on his qualities apart from his medical skill.

Of Arundel's feeling towards him there is no doubt. It was a mixture of amusement at his earnestness in his researches, and also at his attempts to be a connoisseur, occasional vexation at his absent-minded ways, and real affection. All three are plain in the letters written by Arundel during the journey.[29]

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* When the "De Generatione" was entered at Stationers' Hall by Pullein the publisher, March 20, 1651 (by our dating), it is described as Latin and English. The Clerk kindly allowed me to see the entry. Pullein was the publisher of the English version of 1653 which is by Llewellyn.

In Selden's "Table Talk" there is a story headed Devils, in which he tells how he treated a man who thought devils were ordering him to take Selden's life, and how he secured Harvey's cooperation in curing him by a pretended charm. Selden was connected with Harvey by a common love for antiquities. It was on their joint persuasion that John Webb published Inigo Jones' "Stoneheng Restored" in 1655 and he mentions also that Harvey and Buckingham had both explored the site by digging.[30] Webb calls Sir Justinian Isham, (Dorothy Osborne's suitor, "The Emperor"), and Sir John Penruddock as witnesses. They were therefore probably friends of Harvey and Selden. Hobbes of Malmesbury and George Bathurst, Fellow of Trinity, were both friends of Harvey, and so, though a much younger man and rather an admirer than a friend, was Aubrey. To these we may add Howell, the author of "Epistolae Hoellianae," a learned man and a traveller, who was his patient in 1621, and during the Protectorate sent him a copy of his book, "Dodona's Grove."

An interesting light is thrown upon Harvey by his journey into Italy in 1636. In July the Earl writes "Honest little Hervey is going a little start into Italy, and I give him some employment for Mr. Pettye about pictures for His Matie." Harvey had already written to Basil, Lord Feilding, our Ambassador at Venice, saying how much he was looking forward to seeing Italy again, and he started from Innsbruck full of hopes. But things were to happen that he did not foresee. He was stopped at Treviso, and though he had not come through any infected town and his papers and bills of health were all in order, the frontier authorities decided that he might convey the plague, and put him in quarantine. We have heard that Harvey was "very cholerique," and he now reacted promptly.

His letters to Lord Feilding continue.

Aug. 3. He refuses to go to the Lazaretto and is writing on the grass in a field.

Aug. 6. He has been put in the Lazaretto. He refuses now to accept any civilities.

Aug. 9. He is having "ill diet and worse usadg."

Aug. 12. Still there. "They have used a neclect and contempt of his Matie's recommendation in his pass, and of the Emperor, worthy to be hotly complained of, and to me have done barbarous injustice and incivility."

Aug. 13. "Nothing but deceit and jugling."

Aug. 16. "A message from the Senate at Venice that I must stay here till further orders. They do abuse your Excellency. Put them roundly to it. I shall lose my journey altogether."

We feel sorry for the little man, but it is impossible not to laugh, so exactly does he reproduce every angry Englishman who has suffered from the foreign ways of foreign officials.

He did, however, get clear at last, and we find him writing on September 7 from Florence, where the Grand Duke has been very kind. From Florence he went on to Rome where the Queen's agent, Sir William Hamilton, had been asked by Arundel to assist him and Petty. He dined, we are told, at the English College where he met Ent, and he was kindly treated by Cardinal Barberini, to whom Conn, the Vatican agent in England, wrote that he had professed his gratitude.[31]

After a long life of quiet professional work Harvey found himself suddenly involved in a terrible war which lasted four years. He was fortunate in that none of his family lost their lives or were even in active service. But he suffered a personal loss.

> While I am in this discourse, [he says] let the ingenious bear with me, (if being mindful of my great wrongs) I let slip a sigh or two, grounded upon this my misfortune: namely, that while I did attend upon our late Sovereign in these late distractions and more then* Civil Wars; (and that not by the Parliament's bare permission, but command) some rapacious hand or other not onely spoiled me of all my Goods; but also (which I most lament) have bereft me of my Notes, which cost me many years industry. By which means, many observations (especially those concerning the Generation of Insects) are lost and imbezelled, to the prejudice (I may boldly say it) of the Commonwealth of Learning.[32]

Apart from this the war and its results affected him deeply. Ent, in his Dedication, reports a conversation with him at Christmas time, 1650.

> I then instantly saluted him with Are all affairs well and right? How can they, he gravely answered, when the Commonwealth is surrounded with intestine troubles; and I myself as yet far from land, lost in that tempestuous Ocean? And unfeignedly [added he] if the comfort of my studies, and the remembrance of many things, long since fallen under my observation, were not some refreshment to my mind, I know not what could prevail upon me, to desire to survive the present. So it hath happened, that this umbratile kind of life, and vacation from publique cares, which commonly causeth a sadness of mind in others, hath provided a Sovereign Remedy to mine. [Ent urged him to publish something more.] And would you then advise me, (smilingly replies the Doctor) to quit the tranquility of this Haven, wherein I now calmly spend my days; and again commit myself to the unfaithful Ocean? You are not ignorant how great troubles my Lucubrations, formerly published, have raised. Better it is, certainly at some times, to endeavour to grow wise at home in private; then, by the hasty divulgation of such things, to the knowledge whereof you have attained with vast labour, to stir up tempests, that may deprive you of your Leasure and Quiet for the future.

At length he gave Ent the MS of the "De Generatione," the printing and correcting of which Ent promised to take entirely off his hands.

The last transactions of his life, the building of the Museum, show that he had recovered from his depression, and was again interesting himself in outside affairs. It was also the last manifestation of the generosity which was a marked feature of his character, while his response to the offer of the President's chair exhibits the courtesy and unselfishness which he had shown throughout his public career. Nor does he seem to have been different in private.

Men commonly lead two lives: one at home, the other at their business or profession, and their character may appear very different in the two. But that cannot be said of William Harvey.

The family affection of the Harveys is very striking. Their father, in his will, desired them to live "in the fear of God and unity with one another, fast knit together, as they may be evermore an help to one another," and they certainly carried out his wishes. They were constantly associated in business, and when they died they left bequests to all their relations and often in affectionate terms. Nor did they in this confine themselves to the prosperous branches of the family. Their father left small legacies to eighteen of his own nephews and nieces and to three families of his wife's brothers. William, John, Daniel and Matthew all leave money to the Cullens, children of their half-sister, Julian, the child of their father's first marriage, and also to their "poor kindred."

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*"Then" is the old form of "than."

William's own will consists of an original body drafted by Heneage Finch, the future Lord Chancellor, who had married Daniel's daughter, Elizabeth, which is undated, but, since it mentions the Museum as begun but not finished, must have been drawn between July, 1651, and February, 1654, and a codicil dated December 28, 1656. It leaves Eliab, his only surviving brother, his executor and residual legatee. It mentions his lands in Northamptonshire "known by the name of Oxon grounds" (Great and little Oxendon) lately bought of the Earl of Manchester, and others in Leicestershire known as Baron Park bought of Sir Henry (called in Eliab's will Walter) Hastings, Knight. "Both which purchases were made in the name of several persons nominated and trusted by me." Of these Eliab, as we learn from his will, was one. This method of purchase in the names of other parties seems to have been common then. Daniel, in his will, mentions lands in Kent and in Suffolk, "which I purchased in my own name and in the name of some of my brethren." Eliab bought Langford "in my own name and in the name of John Prestwood and Henry Pratt," and other lands "in my own name and in the names of John Prestwood and John Styles." The Combe Neville estate, afterwards owned by Sir Daniel, was purchased according to the Victoria County History of Surrey by "Lord Montague of Boughton and others" in 1649.

These lands of Harvey are charged with the sums needed to complete the Museum, but this provision did not take effect as the Museum was completed during his lifetime.

The will then enumerates legacies:

1. To his loving sister Daniel at Lambeth and to his loving sister Eliab.

The codicil transfers Mrs. Daniel's legacy to her daughter-in-law. Mrs. Daniel was buried in 1655, and young Daniel must have married before December, 1656.

2. To sister Daniel's children, to Eliab's children, to John son of his brother Thomas, to William and Michael sons of his brother Michael, and to Mary wife of Robert West and daughter of his sister Amy Harvey (Mrs. William Ffouke) with a provision for the maintenance of William Ffouke, evidently imbecile, son of the same Amy. In the codicil Mary West's legacy is to go to her daughter Amy West, so that Mary had died before December, 1656.

3. To the sons of his half-sister Juliana, who had married Thomas Cullen, and to her daughter Marie who had married Henry Pratt, and was taking charge of William Ffouke.

4. To poor relations on the Halke side called Rigdon, to "cousins" Mary Toomes, Elizabeth Slower, daughter, and Richard, son, of cousin Toomes, to cousin Mary Ranton, and to other poor kindred.

5. "To all my little god-children, nieces and nephews severally to every one fifty pounds."

6. To Heneage Finch, to Prestwood, to John Doan, to my good friend Mr. Tho. Hobbes, to Kinnersley, to the College of Physicians, to Ent and Scarborough.

7. To his brother-in-law Galen Browne an annuity of £20, and to carry out certain charitable arrangements of "my dear deceased loving wife," a charge on certain land.

8. Annuities to his own two servants, and bequests to the servants of Eliab, to those at Combe, and those at Lambeth.

9. To the poor of Folkestone £200, and to those of Christ's Hospital £30.

John Prestwood was a merchant. He managed some business matters for William. Eliab bought land in his name, and conveyed to him certain personal estate and household stuffs. He was to help Eliab's executors, the widow and the son.

Thomas Hobbes is the philosopher.

Kinnersley is no doubt one of Mrs. Daniel's family.

George Ent, knighted by Charles II, was a physician, much younger than Harvey but educated like him at Cambridge and Padua, who was with him in Rome in 1636, wrote in his defence against Parisanus, and obtained from him and published the "De Generatione." He was one of the original Fellows of the Royal Society, and President of the College of Physicians from 1670 to 1675, and again in 1682 and 1684.

Charles Scarborough was a fine mathematician and fellow of Caius, Cambridge, expelled for his royalist opinions. He came to the Army at Oxford, where Harvey tried, according to Aubrey, to persuade him to "leave thy gunning and stay here and I will bring thee into practice." He succeeded Harvey as Lumleian Lecturer, was one of the original Fellows of the Royal Society, and was knighted by Charles II, whom he attended in his last illness.

Henry Pratt witnesses Daniel's will, and was one of the persons in whose name Eliab bought land. His wife was the daughter of their sister Amy, and he himself was probably in the employ of the Harveys.

A certain number of anecdotes, and references, not always very trustworthy, throw a light upon Harvey in private life.

Of his home life we know nothing. His wife lived till after 1645, for John Harvey the elder left her £100 in his will that year, evidently as a token of regard. But she is not mentioned by Thomas or Matthew who died earlier, and she was dead before William made his will between 1651 and 1654. Her husband speaks of her in loving terms and carried out her wishes in his own will. Beyond the story of her favorite parrot, which is told by Harvey in the "De Generatione," that is all we know of her.

Aubrey, who became acquainted with Harvey in 1651, though he had seen him earlier at Oxford where he was too young to know "so great a Doctor," relates several anecdotes that add to our knowledge of Harvey in private life. Eliab and he used to drink coffee, which was then very uncommon. "His thoughts working would many times keep him from sleeping; he told me that then his way was to rise out of his bed and walke about his chamber in his shirt till he was pretty cool, i.e., till he began to have a horror" [shiver]. When he had an attack of gout he would sit with his feet in cold water in the open air, a practice not usually recommended. "He undervalued

Chymistry," but chemistry in Harvey's time had not become a serious study. In his last years he studied mathematics. "He was far from bigotry."

He was very kind to Aubrey, giving him full information and advice about travelling in Italy, and "he was very communicative and willing to instruct any that were modest and respectful to him." Aubrey makes many mistakes in his facts, and among them we may count his bit of scandal about "the pretty young wench," Harvey's maid. Harvey did indeed leave her an annuity in his will for her kindness to him in sickness, but Mrs. Harvey had also left her a legacy.

Aubrey reports one or two sayings as "that man was but a great mischievous baboon," and that the Turks were the only people who knew how to treat women. But Aubrey probably did not respond very readily to jokes. A truer representation of Harvey is that he disliked marriages arranged on worldly considerations, and thought that "a blessing goes with a marriage for love upon a strong impulse."

One question still remains. What did Harvey's professional brethren and colleagues at the College of Physicians think of him? What reputation did he hold among them? The answer is by no means simple.

It is evident that he was both liked and trusted. He held every office of responsibility at the College, was their principal lecturer, was frequently on their committees, and was one of the Electi who in the College played the part of the Venetian Council of Ten. But it naturally arouses surprise that Harvey was never elected President until he reached the age of seventy-six. It is, however, to be explained if we consider the circumstances. At Michaelmas, 1634, Argent resigned after holding the Presidency for eight years. Paddy, who was a very senior member of the Electi, was absent but wrote a letter in which he proposed Fox, and Fox was chosen. The choice lay between Harvey and Fox. Fox was ten years older than Harvey and much respected, but Harvey had been elected Fellow a year before him. No doubt Paddy's action decided the vote, but there is nothing unnatural in the vote itself, if we accept the evidence shortly to be given that Harvey had not at that time carried opinion with him, or convinced his contemporaries that he was the great discoverer we all now think him. But another opportunity occurred in 1641 when Fox resigned, and on this occasion Meverell was elected, who was a man much younger than Harvey, much his junior in standing, and entirely undistinguished, though popular and a gentleman.

Yet here too it is not difficult to frame an explanation. In the first place Harvey was absent from the meeting, which was on October 20, and was still in Scotland, for Charles did not return from Scotland till November. But apart from that, political feeling was now running extremely high; Charles had actually gone to Scotland against the strongest opposition of the House of Commons, and it was well known that his object was to obtain Scotch support against them. The City was strongly Parliamentary; and the College was not only in the very middle of the City, but was also very far from united for the King. It must have been at least equally divided in opinion even if it had not a Parliamentary majority. Under such circumstances the Fellows would hardly wish to elect a member of the King's Household for their President. They would be afraid of offending Parliament and the City.

But Harvey had not yet reached the reputation which he enjoyed at the end of his life. His colleagues and contemporaries do not seem to have believed his theories. In a later section indications of this will be shown from examinations of candidates, and there is another kind of evidence which points the same way.

Three books on anatomy were published during Harvey's lifetime or just after his death, by Fellows of the College, the first by Helkiah Crooke, a second edition, in 1631, of a work already in print; the second by Alex. Read, Lecturer on Anatomy to the Barber Surgeons, in 1638, and the third by Winston, being his lectures at Gresham College published posthumously in 1659. To them may be added the treatise on fevers by Willis, the Sedleian Professor at Oxford, also published in 1659. All these take the old ignorant view of the heart and the blood, do not refer to Harvey's theory, and do not even mention his name. We may therefore understand that the men who were of Harvey's own standing were never convinced by his arguments, and never accepted his theory. When Hobbes[33] spoke of him as the only man who had seen his theories universally accepted during his lifetime, he was forgetting the old gang of which Winston and Willis, and no doubt others, still survived, and thinking only of the younger generation which had grown up since the theory became public. Harvey himself writing in 1651 makes a limited statement. Of this group Ent, Glisson and Lower were the most famous representatives, and the two former were original members of the Royal Society. Ent in his dedication of the "De Generatione," and the other two in their own medical works adopted the whole of Harvey's opinions and quoted him with the greatest reverence. Sir Thomas Browne thought his discovery greater than that of Columbus.

His fame had spread even to the laity, for, at the beginning of "Oceana," (published 1656) Harrington, criticizing a remark of Hobbes in Behemoth, writes, "Which is as if a man should tell famous Hervy that he transcribed his circulation of the blood not out of the principles of nature, but out of the anatomy of this or that body." Cowley wrote an Ode to him in the same laudatory strain mentioning both the "De Motu" and the "De Generatione," and Dryden paid him a tribute in his Epistle to Dr. Charleton.

But to the physicians of his own generation Harvey was never a prophet.

In 1652, after his offer of a Museum was known, but long before it was finished, the College voted him a statue. It was in cap and gown as we learn from Hamey (*Bust. Reliquiae.*) and to it was added the following inscription:

Gulielmo Harveo
viro
monumentis suis immortali
hoc insuper
P.
Collegium medicorum Londinensium
Qui enim Sanguini motum
Ut et animalibus ortum dedit
meruit esse
Stator Perpetuus.

What the last four lines mean Heaven and Hamey, who was, I feel sure, the author, alone know. "For he who gave motion to the blood," in the "De Circulatione," and "allotted to animals their origin" in the "De Generatione," "has deserved to be [considered as] their perpetual Preserver." Jupiter Stator (originally Stayer of Flight)* was looked upon as the Preserver, but to attribute such qualities to Harvey seems nonsense. Hamey, however, though a good little man, and a benefactor to the College, fully as generous as Harvey, was a little pedant. His Minutes are in the most stilted Latin style with an occasional mixture of Greek. No conceit is too obscure for him, and I am even tempted to think that he may have been coining a pun on the word statua "has deserved to stand here for ever as their tutelary deity."

In any case, good Latin, or bad, the tribute is enough to show that the majority of the College by that time believed in, and admired Harvey's discoveries. The statue was destroyed in the Great Fire.

Harvey nowhere gives us any indication whatever of his political opinions. He followed Charles as a member of his household, and very likely had an affection for him, for he speaks more than once of the kindness which the King showed him, and Charles though ungracious in official matters, being "so framed by constitution as never to oblige any one by word or deed," as an Italian described him, was evidently pleasant in private life. He was one of the most intelligent and cultivated men in Europe, and loved to talk with painters, whose art he thoroughly appreciated, and probably also with a man like Harvey in whose work he was interested.

But scientific men are not as a rule politicians and moreover Harvey must have heard a good deal of the other side of the case, for his brothers were in the City, which before the war was strongly against the King. Even when sending to his friend Nardi at Florence books on the political situation, he expresses no opinion of his own. He probably looked upon the war as a great national calamity from which little good could be expected, and which effectually stopped the one thing for which he cared, the advance of knowledge. His message to Scarborough (see p. 355) seems to reflect that feeling while the war was going on, and the melancholy which is apparent in the interview with Ent (see p. 355) is representative of the shock which the King's death was to the great majority of Englishmen. The army and the Republicans were the only sections of the nation who looked upon the past with satisfaction or with hope upon the future.

Nor have we much more evidence of Harvey's religious views. In those days few men of serious mind were free thinkers, and that he was of a deep and reverent nature is shown by many passages in his writings. The following from the "De Generatione" (Chap. L) reads almost like a profession of faith.

> Where he in my opinion will have justly and reverently concluded, who shall ascribe the generation of all things to that same eternal and omnipotent Divinity upon whose pleasure the whole universe depends. Nor do I think it worthy great dispute by what name this First Cause come to be addressed or worshipped (to Whom is due every name of worship), whether God, or the Creative Force, or the World Soul. For this do all men understand, that He is the

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* In the fight with the Sabines. Livy. Bk. 1, Ch. 12.

> Beginning of all things and the End; that He is the author and creator of all things, who through the varying vicissitudes of generation doth preserve the transient life of mortals, and perpetuate it; that He is present everywhere, and not less in each single work of nature than in the whole universe; and that by His spirit, His providence, His art and His divine mind He procreates all animals . . .
>
> But all natural things are both the works and the instruments of that Divinity; they are either merely natural, as heat, spirit, the moist warmth of air or putrefaction etc., or in addition endowed with life, for all animal motion, and faculty, and life, He doth in some fashion use for the procreation of animals, and for the perfecting of the Universe.[34]

Such a passage might have been written by a theist, but the opening clauses of his will make a definite profession of Christianity.

> In the name of the Almighty and Eternal God. Amen. I, William Harvey of London, Doctor of Physic, do by these presents make and ordain my last will and testament in manner and form following, revoking hereby all former and other wills and testaments whatsoever.
>
> Imprimis, I do most humbly render my soul to Him that gave it, and to my Blessed Lord and Saviour Jesus Christ, and my body to the earth to be buried at the discretion of my executor hereinafter named.

But as in politics, so in religion, we are driven to conjecture from the nature of the man, and have no statement in his writings of a definite leaning to either of the religious parties of the time. While, however, we can hardly imagine that Harvey sympathized with the devotion to ceremonial of Laud, we can still less believe that either the extreme rigidity of conduct, or the brutal irreverence into which a sincere but mistaken fanaticism led the Puritans, can have been approved by such a mind as his. As Aubrey tells us "he was far from bigotry."

VI. THE COLLEGE OF PHYSICIANS

In the third year of his reign Henry VIII made his first attempt to get rid of the swarm of ignorant practitioners of medicine, who infested the town and country to such an extent that they were, in the words of his Act, a public danger.

He passed an Act ordering that no one was to practice in the City or within 7 miles of it without being approved and examined by the Bishop of London, or the Dean of St. Paul's, with the help of four doctors of Physicke, and of certain other persons expert in the faculty of surgery. In the country the authority was the Bishop of the Diocese, aided by such expert persons as he thought convenient.

Those found practicing without a license were to pay a fine of £5 for every month of practice, of which half went to the King and half to the informer.

This method did not succeed, and therefore in the fourteenth and fifteenth year of the reign (i.e., 1522–3) the King granted a charter to six physicians, three of them, John Chamber, Thomas Linacre and Fernando de Victoria, the King's own physicians, and three others, to form a College of Physicians of London, which should include all the qualified physicians then in practice there. These six were to choose two more, the eight were called "Electys," and the Electys, who were life officers, were to elect a president yearly, and to co-opt other persons to fill vacancies in their body, when they occurred. They had the power hitherto possessed by the bishops to license practitioners, and to levy fines for unlicensed practice, and in 1540 the College was given power to choose four persons to examine the shops and stores of apothecaries and destroy drugs that were not sound.

Queen Mary in 1553 enlarged the powers of the College giving the president authority to impose fines, not above £20, and to commit to prison, and in the event of an escape, to sue the keeper of the jail for double the amount of the fine in any Court of Record.

In 1617 King James gave the College power to sue unlicensed practitioners for their fines, and to retain the whole for their own purposes. The four persons, "now commonlie called the four censors," were given powers to summon and examine all medical men and apothecaries, and to correct and punish them by fine and imprisonment up to £3 or seven days, for unlicensed practice, and up to £10 or fourteen days for mala praxis.

The examination of apothecaries' shops was carried out sometimes by the Censors, but sometimes by Fellows specially elected for the purpose.

Apparently the Charter of 1553 remained in force also, for fines of £20 are frequent in the reign of Charles I, and £40 is the fine on a keeper of a jail for an escaped prisoner whose fine was £20.

At the beginning of the 17th century the officers of the College were the president, the treasurer, and the registar (*Registarius* not *Registrarius*) elected yearly by the eight Electys, two Consiliarii chosen yearly by them out of their own body, and four Censors nominated yearly by the president, but elected by the Fellows. The Fellows were twenty-four in number, with the addition of six Medici jurati Regis, making thirty in all.

At that time the statute passed in the previous century forbade the election of any man to the fellowship, unless he was of English birth (*natione Anglus*), or one of the King's Physicians (*jurati Regis*). But the accession of James created a difficulty. In 1605 John Craig the elder was appointed Physician to the King, and the question was raised whether he, as a Scotchman by birth, was eligible. It was resolved that the Scotch were to be accounted English, and he was elected. The statute was altered in 1616 by substituting "Britannicus" for Anglus. In that year Mayerne, a Frenchman, who had been appointed Physician to the King in 1611 was elected Fellow.

Elections were by ballot, the Ayes using peas, the Noes beans. Fellows took an oath of fidelity to the King, and also swore to obey the College Statutes.

In 1617 a College Statute gave the Physicians in Ordinary precedence next below the President, and above the Electi. In 1618 the total number of Fellows was raised to 34, in 1627 a list of 36 is given in the Annals. In 1635 there is a list of 27 Fellows living in London, three living in the Provinces, and in addition eight Physicians to their Majesties, Mayerne, Betoun, Lister, Harvey, Craig (the younger), Ramsay, Grent and Cademan, of whom Cademan and Lister were Physicians to the Queen. In 1637 the total number, including these eight, is only thirty-five, of whom two (Williams and De Laune) were holding appointments in Ireland. Prujean was living in Lincolnshire, Rand at Newcastle, and Glisson was Regius Professor at Cambridge.

The Medici jurati Regis took, as the title implies, a regular oath of some kind on appointment, and in 1611 we find Mayerne writing to inquire about it (*C.S.P. Domestic Jas. 1*). He received then a pension of £400, and by an entry under date July 20 of that year (*ibid.*) he seems at first to have been Physician to the Queen. In 1619 he is granted a pension of £675, and his wife Margaret one of £300 on his decease.

The title "King's Physician" is, however, used apparently in the State papers of persons who were not Physicians in Ordinary. Thus in 1615 Duncan Primrose was appointed Physician to the King, and the next year he was appointed Surgeon. In 1619 a grant of £250 was made to Dr. Chambers, the King's Physician. Neither of these men was elected to the Fellowship, and therefore probably neither of them was a Medicus juratus Regis in the full sense.

The Fellows were chosen as vacancies occurred, from the Candidati, who corresponded to the present members. They were obliged to be M.D.'s of Oxford or Cambridge and of English, or after 1616, of British birth. Primrose who presented himself to be examined for Candidatus in 1629 was refused as "natione Gallus ex patri Scoto." He seems to have had interest at Court for the King wrote asking that he might give a lecture in the City. The College answered unfavorably, and this perhaps explains Primrose's violent papers against Harvey's discovery.

(*To Be Concluded*)

[From Redi: Sonetti. Firenez, 1702.]

STRUENSEE*

By WILLIAM F. PETERSEN, M.D.

CHICAGO, ILL.

THE last half of the eighteenth century presented a picture as bizarre and conflicting, as unstable and restless, as Godless and unmoral, as topsy-turvy as our own epoch. Cynicism and pessimism vied with pietism and bigotry; accurate and logical thinking with pedantry, sophistry and bombast. Outworn systems of State and Church and social organization were being infiltrated and sabotaged, but the saboteurs themselves seemed not to know the goal. An age of freshness and staleness, an age of deep shadows and scintillating highlights; the twilight of medievalism and the sunrise of that cultural epoch in the midst of which we now seem to be living. The world was beginning to jolt on its way but the road was not marked. A few European countries were experiencing the prodromal symptoms and paroxysms and chills of what was to develop into the fever of the French Revolution. An interesting age; psychologically as interesting as our own and somewhat simpler to follow because the world was much smaller and the personalities fewer.

And on these insecure boards I should like to place three characters for your inspection: a physician of the age, a schizophrenic king and a lovely young queen. A human triad, as usual, but a triad of unusual characters; all reacting in a fashion that we, as medical men, would regard as wholly logical.

Of course this play of characters resulted in a tragedy. But tragedies are, after all, daily events in our particular contact with the world and I present this doctor to you not because of a gruesome outcome, but merely to illustrate the inevitable development of the course of events, the intangible thing called fate, which to some minds proves the absolute logic and law of the universe, to others its very lawlessness. We take our choice, according to our light and liking.

It concerns the career of an alert, intelligent, cynically bored physician whose intellectual brilliancy found no proper setting and but little satisfaction in the bourgeois life of a small city. Through chance, circumstance, intrigue and ability, the dictatorship over Denmark and Norway came into his hands.

It is the story of a career that violates many of our concepts of honor. That we may stamp the individual as a coward and even a cad, as we impartially survey the events, need not lessen our interest in their train.

Nor do I present him as a great physician, which he was not, nor as a great man, which he was not, nor yet as a good one. He was part of the eighteenth century and merely as such should he be regarded; that he was a medical man is merely an incident.

With all this as a prelude I cannot very well begin the story, as from its context, I well might, that "once upon a time there lived a lovely princess in a far-off island."

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* I am under obligation to Dr. Harry Schmidt, formerly of the Baltic Institute of the University of Kiel, for his interested cooperation in this study.

On the contrary, our story begins at Halle on the Saale, in the district of Magdeburg. Halle is from the Greek root for salt; Halle in German means salt works. The town was one of the chief continental salt markets in the late Middle Ages and the wealth so derived forms the basis on which the University was founded.

Struensee, Johann Friedrich, was born here in the year 1737, the son of a most eminent and worthy divine, Adam Struensee. The Reverend Adam Struensee, whose hymn books had found wide acceptance in the church of his day, was a living exponent of pietism. It permeated his thoughts, his dogma, his conduct, his daily habits and his household. Now pietism, I shall not go too far astray into theology, was a reaction against the stern Protestant dogma of the Reformation and consisted largely in leading the "goodly life" rather than in mere belief in certain dogmatic tenets. As a matter of fact, the University at Halle had been founded largely by a group of its exponents and it may be of interest to recall that the Moravian Church, to which many of the early German settlers in this country belonged, took origin in Halle. The Dunkers, too, were closely allied.

Now perhaps young Struensee should be regarded with suspicion from the very beginning because he was the son of a preacher. Deep down in the heart of every congregation, the preacher's son is guilty until proved innocent, at least as far as the male part of the community is concerned. Inasmuch as the royal executioner ended the relatively short career of Johann Friedrich Struensee, one might surmise that the questioning shrug of the congregation might have been justified, that he was really one of the black sheep. But this sudden termination of his career came about as a political event.

Physicians have seldom achieved fame as statesmen. Indeed critics of our profession have not infrequently dwelt upon this fact and reproached us for an apparent lack of interest in public affairs which, because of the presumptive intelligence of the group and the more intimate knowledge of human relations and needs, might as a matter of fact, seem logical and highly desirable. We must seek the reason not in an apparent lack of interest, but in the psychological background of the medical mind. Physicians are probably not cynical enough, probably too tolerant and too liberal. Indeed, when medical men have been successful statesmen they have almost invariably been physicians in name only. The career of Clemenceau may well serve to illustrate the point. But even Clemenceau was a thorough going liberal, the "wrecker of cabinets" was his epithet, the champion of such an unpopular cause as that of Dreyfus, successful, in the popular sense, only in his old age.

How little Clemenceau knew of modern medicine came forcibly to my notice some time ago when the report of a memorial meeting was published in the Paris letter of the *Journal*. Professor Roux, first calling attention to the fact that as a young man, Clemenceau, being a pupil of Robin, had been an adherent of the theory of spontaneous generation, had but in recent years asked him to explain this "germ theory of disease and of fermentation" to him: this was in 1927.

When actively participating in public life, medical men, probably because of their humanitarian leanings, have far more often been in the very front ranks of the liberals and reformers. As revolutionists, rather than as statesmen, we read their names in history.

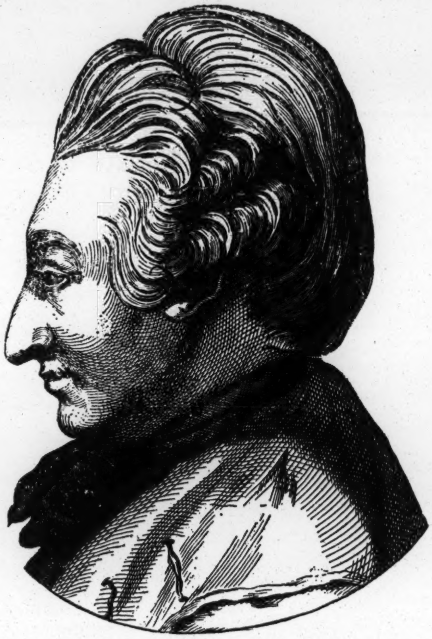


FIG. 1. JOHANN FRIEDERICH STRUENSEE (1737–1772).

The sentence which decreed the end of the politically inclined Dr. Struensee had been signed on April 25, 1772, and in the city of Copenhagen. It read:

> Count Johann Friedrich Struensee, as just punishment for his misdemeanors and as an example to the like minded, forfeit honor, life and property; be deprived of rank and honors; that his escutcheon be broken, his right hand first hewn from his body and then his head severed from the trunk, the body to be quartered, broken on the wheel and the head and hand exposed to public view on a pike staff.

From which one may conclude that Copenhagen still had the flavor of the medieval 150 years ago. It certainly cannot be described as the successful ending of an adventure in statesmanship. And so you see, with such an ending in view, I cannot very well begin the story, as I really might with "once upon a time there lived a princess on a far-off island."

Our Struensee entered the University at the age of fourteen. At nineteen he had graduated in medicine. His thesis, "On the Deleterious Effects of Abnormal Movements," the title-page of which I have reproduced, is made up of 40 pages of excellent Latin and treats of a problem of the school medicine of the time. There is one thing that is of interest; this concerns the dedication to the maternal grandfather, Dr. Johann Samuel Carl, erstwhile Privy Councillor and Physician-in-Ordinary to the Danish King and to his two maternal uncles, Johann Christian, physician in Dithmarsia in Holstein and August Ernst, at that time Physician to the Prince of Stollberg.

These connections were of some importance in shaping his future destiny. Grandfather Carl, himself a mystic, had lived in the family of his daughter at Halle from 1742 until some time in the fifties, when we find him with his son at Meldorf in Holstein. In the history of German medicine he is of interest because of a tract which he published, "Vorstellung von Doctoro Medico," devoted to a plea for the establishment of hospitals and their connection with anatomical, botanical and chemical laboratories whereby their usefulness for the teaching of medical students might be enhanced. Perhaps we may find some of the grandfather's vision in the son of the daughter.

Having graduated in medicine at the age of nineteen it appears that Johann Friedrich proceeded to practice with one of these maternal uncles at Gedern in Hessia but nothing is known of his activities there.

When, in the year 1757, the Reverend Adam Struensee was given charge of Altona's largest church we may surmise that the choice came about not alone because of his pious reputation but because of the old Danish connections of the father-in-law. At any rate the transfer meant great advancement for it proved but a step to the superintendency of all the churches of the province of Holstein.

Perhaps I should stop for a moment to explain the rather complicated ties which bound Schleswig-Holstein, Denmark and the Holy Roman Empire into a beautiful bundle of red tape. Holstein had always been an outlying border province of the Holy Roman Empire. The Dukes were the direct vassals of the Emperor. Schleswig, largely Danish to the 9th century, especially on the Baltic side, had always been a fief of the Danish Crown. The two provinces, however, partly because of their natural geographic relation, partly because of continued northward penetration of German merchants and settlers, had in solemn conclave decided that they should form one undivided unit. Then came an impecunious Emperor who turned Holstein over to the Danish king as a pledge for a loan, not as part of the kingdom, but as a Duchy of the Empire, to be held in personal fief. This relationship existed at the time of Struensee and you can understand how the German preacher could become the head of the church of what was, *de facto*, a Danish province.

Altona was its chief city. It, too, is of some interest. We probably would pronounce it as the Pennsylvanians do its namesake "Altōōna." Altona means just what it says, all too nigh. Started by some venturesome tradesman (but I suppose realtors were in the background just as now) right under the very nose of Hamburg, these good burghers promptly dubbed it "Altona."

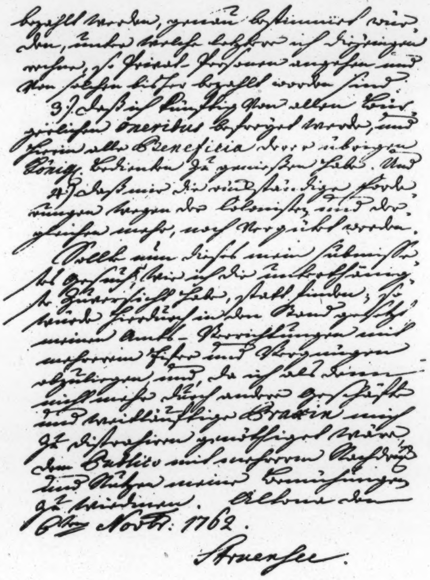
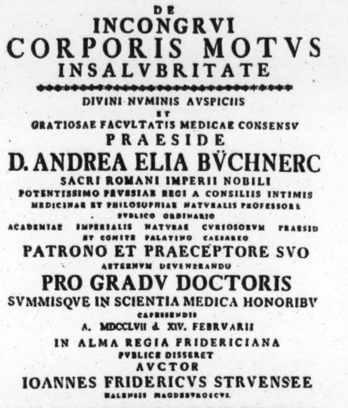


FIG. 2. FACSIMILE OF STRUENSEE'S REPORT TO THE MAGISTRATE OF ALTONA.

When the family moved to Altona, young Johann Friedrich came along and with grandfather in the good graces of the Danish court and father the preacher of the leading church of Holstein, one can readily understand that young Struensee was promptly in line for a "job." The city physician, Dr. Bolten, had recently died. There were eight applicants for the position, some of them highly qualified practitioners, but Struensee was appointed. This was in October, 1757.

Altona at this time was a sleepy little town of some twenty thousand people and while it was the administrative headquarters of the province, it was, after all, merely a suburb of the free city of Hamburg and separated from it only by its walls and moat. It had a relatively new aspect, having been rebuilt in 1713 after the burning of the city by the Swedes.



DE
INCONGRVI
CORPORIS MOTVS
INSALVBRITATE
DIVINI NVMINIS AVSPICIIS
ET
GRATIOSAE FACVLTATIS MEDICAE CONSENSV
PRAESIDE
D. ANDREA ELIA BV̈CHNERC
SACRI ROMANI IMPERII NOBILI
POTENTISSIMO PRVSSIAE REGI A CONSILIIS INTIMIS
MEDICINAE ET PHILOSOPHIAE NATVRALIS PROFESSORE
PVBLICO ORDINARIO
ACADEMIAE IMPERIALIS NATVRAE CVRIOSORVM PRAESID
ET COMITE PALATINO CAESAREO
PATRONO ET PRAECEPTORE SVO
AETERNVM DEVENERANDO
PRO GRADV DOCTORIS
SVMMISQVE IN SCIENTIA MEDICA HONORIBV
CAPESSENDIS
A. MDCCLVII d. XIV. FEBRVARII
IN ALMA REGIA FRIDERICIANA
PVBLICE DISSERET
AVCTOR
IOANNES FRIDERICVS STRVENSEE
HALENSIS MAGDEBVRGICVS.
HALAE, LITTERIS GEBAVERIANIS. 3

Fig. 3. Title Page of Struensee's Thesis.

The position as city physician was not exactly a sinecure. It was a part-time job, the salary of 70 thalers per year being quite inadequate to eke out an independent existence. It was taken for granted that the incumbent would carry on private practice in addition. But a private practice was not to be had over night.

I have previously mentioned that in the Reverend Struensee's household, pietism reigned. It would not therefore surprise you that the son over-corrected, indeed, bent backward a very long way. Voltaire was his mentor and Jean Jacques Rousseau his philosopher. The "goodly life" of the pietists did not interest him. His ambition was to live a fast and merry one, even though it might be short. It was the typical father-son conflict that we see so often. Even in sleepy little Altona with its twenty thousand burghers, ambitions such as these could be fulfilled, but one needed money.

As long as his father lived in Altona he lived with his parents but on assuming the superintendency of the Churches for the Province in 1760, the father moved to Rendsburg and our Struensee took a house of his own. It was a simple household but a good one. The table was always set for six guests, military, officials, savants; such guests as these were readily achieved, as were debts and a reputation.

Before long (November 6, 1762) we find him seeking relief from the town administration through an increase in his salary. Inasmuch as his petition gives some insight into his activities I shall quote a page from it.[1] Says Struensee:

> Not only must I prepare official reports of medical cases, inspect the three official pharmacies—take care of those accidently injured or wounded—the insane—and assist at all official autopsies—but I must crawl into the filthiest holes and risk life, or at least health in the vile stenches of such habitations . . . Furthermore, I must attend the sick in the Orphanages, Lazarettes, Jail and Police Stations. Daily some eight or ten pauper patients come to the house and not infrequently I must seek them in their widely scattered homes, as too, I must attend strangers and passing workmen. Add to that lectures in anatomy.

Eke out an existence with private practice? Altona already had six practitioners. And the times were bad and charlatans many. "The local nation by character prefers the charlatan to a sensible doctor" he goes on to complain. As City Physician he must live in some representative fashion, not as an ordinary practitioner and Altona is an expensive city.

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[1] Published by Dr. Hoffman. Amtsblatt der Staat Altona. April 3, 1926.

The Magistrate thought otherwise. Being City Physician was a part-time job and it behooved the suppliant to enlarge his private practice, although said the reply, "his ability and excellent character are not unknown to the magistrate."

He next tried publicity; this by no means an original method even with him. It had been tried before and it has been done since. As a matter of fact his chief competitor, a Dr. Unzer, published a periodical of his own called *The Doctor*. In July, 1763, Struensee's venture appeared under the title *Monatschrift zum Nutzen und Vergnügen* a title that fits in rather well with Struensee's philosophy of life.[2] Anonymously he apparently contributed three or more leading papers, among them "The Ideas of a Doctor on the Depopulation of a Country," on the "New Method of Operating for Cataract" and the "Eulogy of the Dog and 'Album Graecum.'" With this latter paper, so characteristic of the day, I shall be concerned for a moment.

"Album Graecum," literally Greek White, means, according to the Century Dictionary, the dung of dogs, which, on exposure to the air has become white like chalk and was at one time used as a medicine. The "Eulogy of the Dog and 'Album Graecum'" is replete with biblical and theological phrases and similes and in a most sarcastic fashion points out how, in the attributes of gratitude, sacrifice, faithfulness and other virtues, the dog may be said to be far superior to humans and furthermore praises the merit of the dog in furnishing mankind with this particularly efficacious medicament. He concludes:

> I am of course aware that my readers will think that much I have written an exaggeration. Not a single physician has heretofore publicly acknowledged the canine intestinal dexterity in furnishing us with so precious a substance—indeed it is seldom mentioned even in pharmacopeial texts. Fortunately I am not unarmed with proof of its efficacy. Who is not familiar with the white powder, the discovery of one of our most renowned physicians that has enriched our present epoch? The powder which, despite the modesty of its originator, is really a panacea; the powder which has become simply indispensable to a large part of Germany and its adjacent Provinces? This powder is (the well known liberality of the learned discoverer, will I am certain, not take it amiss) this powder is, let me proclaim—pure "Album Graecum." If it be not such, it is in its effects quite like it. From everything that I have said you can readily see that the dog has far greater merit than the human. I know of only one man that is as good as the dog and that is Dr. ————. And of only one medicine as good as "Album Graecum" to wit his powder, and that is "Album Graecum." For, says the learned Professor Pangloss "nothing is so like a thing than the thing itself."

Of course, everybody in Hamburg and Altona knew who was the butt of this satire. Dr. Unzer sold the secret preparation, this powder for the improvement of digestion, and from it derived a considerable income. *Pulvis digestivus Unzeri* was supposed to consist of magnesium carbonate, potassium sulphate and saltpeter.

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[2] Hible. Struensee's literarische Thätigkeit. *Zeit. der Gesellschaft f. Schl. Holst. Lauenburgische Geschichte*, 16: 278, 1886.

In the October number of the periodical Struensee again takes up the cudgels in the battle against secret remedies and in a mock epitaph for the tombstone of Magister A. Sukermann he uses the following verse:

Let no profane human hand this grave now desecrate
But let a dog with "Album Graecum" it decorate.

Of course there was a storm of protest, not only from the friends of Dr. Unzer but from all the clergymen of the two cities. The journal was promptly confiscated by the censor and the printer reprimanded.

Struensee made another start. The journal was called *Altonaische Monatsschrift zur Beförderung der Wissenschaften, der Kunste, des Geschmacks und der Sitten*, and was started in 1764.[3] Again he promptly got in trouble with the censor, so his final contributions were published in the *Schlesswig-Holsteiner Anzeigen*, October and November, 1764. One of these was on "Poison" and the other on "Foot and Mouth Disease"; both were written in a popular vein.

In the one on foot and mouth disease he clearly recognizes the clinical entity as such, describes the same, and in his concluding paragraph queries whether it might not be feasible to artificially inoculate the animals, since they are resistant after recovery. Preventive inoculation against smallpox had been in practice in the Orient for many centuries and somewhat before this time had come into vogue in continental Europe. By this method, scabs from a smallpox patient were inoculated into the skin, with the hope of bringing about a relatively mild smallpox. Needless to say the procedure was quite dangerous because the form so acquired was occasionally very virulent.

Both papers reveal keen observation but do not rise far above the professional level of the day.

He seems to have been decidedly industrious, and during these years had made many fast friends: his hospitality had borne fruit. Among these was Shack Karl, one of the Counts of Ranzau. Through this and other connections it was not long that he became a favorite in the very best social circles of the Province: he "became the fashion." Add to this the fact that he was a handsome, polished bachelor, a witty conversationalist, "renommé par ses succès auprès des femmes" as Reverdil characterizes him, and you have the background for his social success.

But with all this he was restless and dissatisfied. He was in debt; he was under the weather and feeling rather miserable and about this time was seriously considering migrating to the East Indies to improve both health and fortune.

In 1766 Christian VII became King of Denmark and Norway, a boy-king, being fifteen years of age.

In England George III had been king for some six years and his sister had reached the mature age of fifteen. Brother George decided that a marriage of his sister to the young King of Denmark and Norway might be decidedly useful and a royal contract was arranged to that effect. The dowry was 100,000 pounds sterling.

In those days of merry old England, eugenics played a far lesser rôle than practical politics in royal marriages. As a matter of fact, the word had not yet been invented. Today we are, of course, far beyond this rather primitive stage in royal matings.

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[3] Library of the University of Copenhagen.

In 1765 George himself presented the first evidences of the recurring mental malady which in his old age made him absolutely and hopelessly insane.

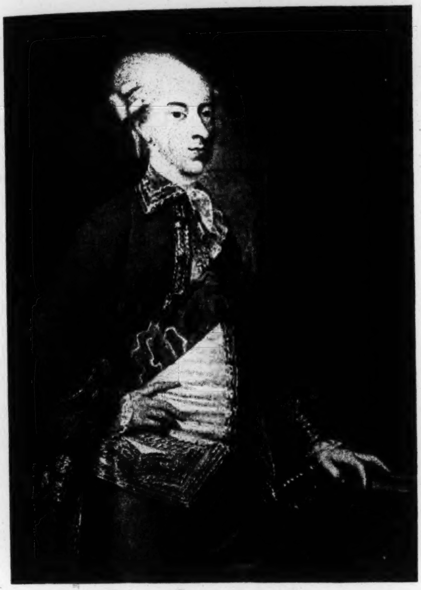

FIG. 4. CHRISTIAN VII.

And the young king of Denmark and Norway? Reared under the rod of a most brutal drillmaster who thought that stern discipline was the only rôle for adult efficiency, he was no sooner released from restraint than he was swept into a life of utter debauchery. Hardly past puberty he began to show evidence of mental abnormality, today we would classify him as a schizophrenic, a dementia praecox, with homosexuality as one of the associated symptoms.

This was the husband for Princess Caroline Mathilda. As you see we do finally bring in "our princess from a far-off island" and she really was young and charming and beautiful.

I shall pass over her introduction to the Court at Copenhagen: its festivities, its intrigues, its rivalries, its scandals.

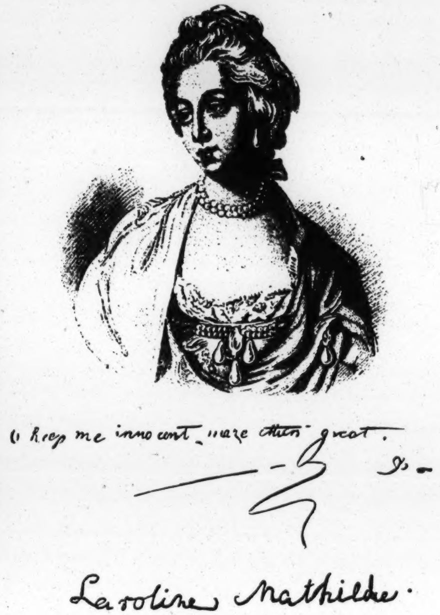
O keep me innocent, make others great.
Caroline Mathilde.

FIG. 5.

The year following his marriage, young Christian VII undertook the grand continental tour. As you know it had always been customary in the best circles to send the young man of a family on a sight-seeing tour of the capitals of Europe. Christian had never had this liberalizing opportunity and after the birth of an heir in 1768 it was arranged that the king, accompanied by an extensive retinue, should tour Germany, Holland, England and France. For such a trip, a proper physician had to be found and Struensee's noble protagonists promptly proposed him as an ideal man for the position. On the 6th of June, he joined the royal suite. The trip took seven months; Struensee returning with the King to Altona in January, 1769. The trip cost the

Danish State the sum of one and one-half million thalers besides expenditures for innumerable purchases which the king made while abroad.

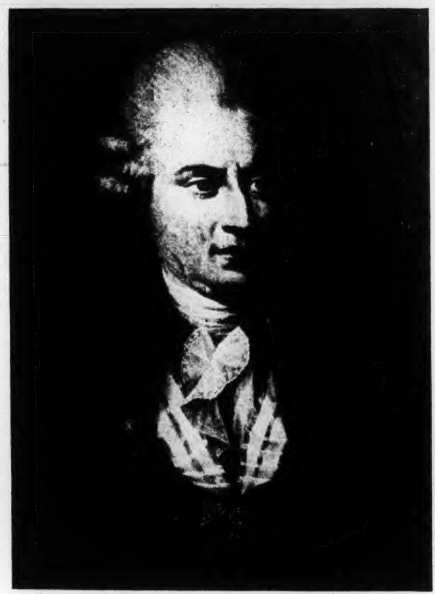

Fig. 6. Count Struensee. Portrait in 1771.

But Struensee had learned a great deal; he had visited museums, universities, clinics and libraries. At Oxford he had even been made an honorary Professor of the Medical Faculty. He had taken good care of the health of his royal patient and tried to warn him very frankly against the innumerable excesses in which he indulged. The mental condition of the king seemed improved on his return.

Struensee had not forced himself to the front, had made no enemies; a rather important achievement this must have been in the petty atmosphere of the gentlemen of the suite.

So successful had he been that his appointment as permanent Physician-in-Ordinary to the King promptly followed at a yearly stipend of 1000 thalers, and in the following May came his advancement to the rank of Privy Councillor. He was now at Court in the true sense of the term: a shrewd man, cynical, profligate, unscrupulous, wholly charming and, do not forget, "un très bél homme, renommé par ses succès auprès des femmes."

At the right time the queen became ill. The boy king insisted that Struensee should see her. The queen refused to receive him; to her he was but a superficial courtier, a libertine, a cynical agnostic. The king in stubborn and ill-tempered petulance insisted. And under such circumstances Struensee, sent for by his infamous little insane master, first met the queen, by this time a neglected queen, thoroughly unhappy, lonesome and homesick. Not exactly an auspicious beginning!

But Struensee was a man of the world. He knew a good deal about feminine psychology, he was quite competent to master such a situation.

He made a very careful professional examination, found that she was not suffering from dropsy, as had been suggested by previous physicians, but that the disease was largely imaginary (I presume that he was dealing with a mucous colitis). He promised a rapid cure and he succeeded.

He saw only too clearly the etiology, the curious and inexplicable conduct of the king, vacillating between rude neglect and public display of ceremonious gallantry. The heart was sick, not the body.

He proceeded in the rather direct and sensible fashion that is discernable throughout in his relations to the king, urged the latter to be polite and natural to the queen. Like the child the king was, he promptly obeyed, became docile, did everything that Struensee suggested. And the queen, previously powerless, under Struensee's shrewd tutelage, gained an ever-ascending power as the mental lethargy of the boy king increased.

Of course, the king's mental condition was hopeless. The Danish psychiatrist, Viggo Christiansen, has published an interesting monograph on the subject of this royal patient.[4] In it he lauds Struensee's careful observations, recorded shortly before his execution, which contain a wealth of vivid detail of great clinical importance, so accurate that the diagnosis of dementia praecox can be made from them.

In the years 1769–70 an epidemic of smallpox ravaged Denmark. In a very short time about 1200 children had died in Copenhagen. In the terror of the court, Struensee insisted on inoculating the young heir to the throne and apparently the inoculation was successful.

Needless to say Struensee's influence with the queen increased in direct proportion. He took actual charge of the care of the child, ordered a regimen that to us seems natural and simple, but in that day and age was regarded as heretical. He was appointed reader to the king and secretary to the queen at an additional salary of 1500 thalers per year.

From this period on the story is no longer medical but concerns court intrigue of the type familiar to you from the innumerable memoirs of the period. Suffice it to say that Struensee became the lover of the queen, completely dominated the action of the incompetent king, and proceeded to rule Denmark. This was in September, 1770.

The Chinese have an old proverb to the effect that "a great ruler is a public calamity." The underlying thought is that a restless ruler is frequently getting his nation into some sort of hot water, war very frequently. Astute modern politicians act on that knowledge and they are the more successful.

People do not like to be disturbed in the ordinary course of their lives and if any new policy begins, it means that someone must be disturbed.

Struensee was burning with the itch to reform the nation. You recall the adage of "something rotten in the State of Denmark?" Struensee seemed convinced of that.

He began by reducing the number of courtesy titles that were to be created. Only such as really deserved distinction were to be nominated.

He created a commission to investigate the conduct of the expedition against the Dey of Algiers. You may recall we had a similar expedition in the years 1804–05 in one of which Decatur won his laurels.

He abolished the press censorship and established freedom of the press, the first in Europe.

These decrees were issued as cabinet orders of the King without sanction of the ministry and all were issued in German. In the curious internationalism of that day, apparent in almost every sphere of life, the French mode was of course supreme in court and official circles. But in the northern countries, German was also very pronounced and particularly at the Danish Court, where the leading nobles came from the two Duchies. But even here the official proclamation had always been in Danish and the sudden change naturally caused comment.

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[4] Christiansen, V. Christian VII's Sindssygdom. Copenhagen, 1906.

The next step was the removal of Bernstoff, the prime minister. Then followed a whole series of dismissals of the Court party opposed to the queen, to Struensee and his friends. As he was reader to the King simple reiteration was sufficient to sway the latter's poor brain into any channel that Struensee had in mind.

The administration of the finances of the kingdom were next ordered, everything under centralized control. A budget was adopted. All pensions were to be reduced. You can imagine the feeling that that set up in a country where pensions were everyday affairs. The number of law courts was reduced and all litigants were to be regarded as equals before the law, the judges were put on fixed salaries and no longer could get fees. The Navy was reorganized. Court life was to be simplified. The growth of Copenhagen was to be encouraged by trade and industry. Public morals to be raised, but not through police restriction.

You must remember that Struensee had been raised on Voltaire and took Rousseau at full value and here was his great opportunity to put into active practice all the philosophy that the French School had dreamed about. It was the inevitable urge to reform the world. Perhaps it was the physician that creeps out, perhaps merely the remnants of his juvenescence. It was not an outcropping of practical statesmanship.

Next came the abolition of torture, the reorganization of the hospitals, the compilation of a new pharmacopeia, the establishment of a hospital for syphilitics. Imagine the indignation of the clergy when he took the hospital chapel to make room for a syphilis ward, the extension of variolation, the public training for midwives, the building of a hospital for infectious diseases.[5]

There were not less than 600 decrees and orders in the 600 days of his power. All the pent up energy of his former years seem to gush forth: he wanted to cure the body politic with heroic measures. The dramatist Hebbel has contrasted him with Hamlet, who, because of long cogitation never acted; Struensee, because of constant action, never had enough time to think.

Six hundred reform projects in 600 days! Need one point out the mass opposition so aroused!

Add the gossip of the court that penetrated to the streets: the queen the mistress of Struensee, Struensee the father of her second child, the queen who rode astride in public and in men's riding clothes. *Add* the malevolent queen-mother who plotted day and night to circumvent her daughter-in-law. *Add* the clergy who hated the cynical agnostic. *Add* the nobility who despised the bourgeois upstart (he had of course been ennobled and was now Count Struensee). *Add* the suspicion of the populace who resented the power of the German Dictator and an English Queen, neither of whom could speak a word of Danish. *Add* the discontent of thousands of mechanics and sailors who had been gathered in Copenhagen to build a fleet against the Algerians, now idle and restless, or the silk weavers of the royal silk factories. *Add* crop failure and a stringent money market. By the end of 1771 the horizon was black, the sultry atmosphere of the court and state charged with portentous foreboding.

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[5] See Jenssen-Tusch, G. F. von, Die Verschwörung gegen die Königen Caroline Mathilda. Leipzig, Costenoble, 1864.

Struensee was no longer certain of the army. He began to disband the gardes du corps. The freedom of the press was again restricted.

And what was worse, he showed personal fear. Of all requirements of a dictator, personal courage, I presume, is most essential. Struensee seems to have lacked this primitive quality. On two occasions when minor mutinies of the troops occurred, he was the first to run. And yet, when Keith, the English Ambassador, deeply concerned for the safety of the young queen, approached Struensee, even offered him a considerable sum of money if he would quit his post and leave the country, Struensee refused.

During the night of January 16, 1772, Struensee and the queen and most of the leaders of their party were arrested, the conspirators a small coterie that centered about the queen-mother Juliana. Struensee surrendered without a struggle. The young queen fought: it took a whole detachment of soldiers to subdue her and separate her from her children; she was confined in a neighboring fortress.

The mob at Copenhagen celebrated. The victorious court cabal rejoiced; the clergy gave thanks to God and the wheels of the Pension Bureau began to move faster.

The rest of the story is a short one. I have intimated that Struensee had nothing of that which we call character. He was an opportunist pure and simple, physically a coward, and what was even worse he was a cad. For the young queen I must confess genuine admiration.

A court of jurists was convened for the trial. The session began the twentieth of the following month. On the second day, wholly broken and weeping bitterly, Struensee admitted illicit relations with the queen. Whatever his motive, whether he thought that the State would try to hush so great a scandal, whether it was fear of torture, the fact remains that he cut a sorry figure.

Later, too, he abjured his godless life and became a humble, penitent Christian.

The arrest of the queen was promptly reported to King George III. Seeing that it involved a domestic affair in the marriage of his sister and the king, he made no effort at intervention, merely intimating that anything more than a temporary arrest was not to be considered. But when in April George began to realize that the Danish Court was even considering the execution of the queen and the exclusion of her children from their rightful heritage, orders were prepared for an English fleet to blockade Copenhagen. The court cabal capitulated and agreed to a prompt divorce. The English squadron conveyed the queen from the Danish realm.

In the meantime Caroline's mother had died, twelve days after receiving the tidings of her daughter's imprisonment.

At her trial the queen admitted her guilt.

I have already quoted the verdict that condemned Struensee. His close associate, Brandt, was likewise to be beheaded. The royal executioner made a mess of his job. All Copenhagen had assembled to see the spectacle. They must have enjoyed the affair, for it took four blows of the axe to sever the head of Struensee, with the attending gruesome horror that went with such faulty technique. From the palace window the queen-mother Juliana, the chief figure in the cabal against Struensee, witnessed the execution through a telescope and presumably found some satisfaction in the procedure.

Three years later an English traveller described Struensee's skull and hand still rattling high on a pike staff on the hill of execution.

Those familiar with the Walpurgis Night scene in either Gounod's Faust or Boito's Mephistophiles recall the setting at the Brocken in the Harz, that legendary domain of gnomes and fairies, of dragons and kings and fair princesses in rose embowered enchanted castles. Not far from these Harz Mountains the English King possessed, he being Elector of Hanover, too, a small Duchy and a pleasant residence in the town of Celle. Even toward the end of the 18th century it was very far from the world. Long winding roads through sand and moor and heather took one there. If you were lucky it was not less than two weeks from England. Here our young English Princess-Queen now lived in exile, her only emotional outlet being the care of an orphan child which she had taken into her household upon her arrival.

Walpurgis Night of 1775 had hardly passed, Walpurgis Night, to commemorate an English Princess of the Kentish House who in the ninth century led many nuns to Germany to found religious houses, Walpurgis Night, the last night in April, in dim heathenish times a night of revelry that marked the beginning of summer. Secret ambassadors, the English Sir Wraxall, former adherents of her party in Denmark, friends in the Duchies, were passing to and fro. There was restlessness in Denmark, there was the possibility of her restoration, the thought of seeing her children no doubt uppermost in her mind.

Only Brother George was cautious. The rumbling of the colonial storm in the American Colonies was diverting his poor mind from dynastic affairs to those of larger portent.

Suddenly her foster child became ill, scarlet fever the doctor said. The princess-queen herself became the nurse, and four days later our beautiful princess "from a far-off island" was dead.

HERNIA HEALERS*

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DURING the early part of the nineteenth century an ash tree grew by the side of Shirley Street in Selborne, England. A long seam or cicatrix ran down its side, giving evidence that in its youth it had been split lengthwise. In the neighborhood other scarred pollard ashes might be found, for the common belief was that these trees served a definite therapeutic capacity. It was an old custom to split an ash sapling and hold the aperture open with wedges while a ruptured child was passed through the cleft. A sympathetic connection was then supposed to exist between the patient and the tree. The trunk was tightly bound and as it healed the hernia was cured. In Frazer's discussion of folk customs we find the quotation:

> Thomas Chillingworth, son of the owner of an adjoining farm, now about thirty-four, was, when an infant of a year old, passed through a similar tree, now perfectly sound, which he preserves with so much care that he will not suffer a single branch to be touched, for it is believed the life of the patient depends on the life of the tree, and the moment that it is cut down, be the patient ever so distant, the rupture returns, and a mortification ensues, and terminates in death, as was the case in a man driving a waggon on the very road in question.

The ash cure is only one of many attempts to remedy a disorder which has afflicted mankind since prehistoric times. When the Lord created Adam, no doubt he was confronted with the problem of passing a structure such as an esophagus, a blood vessel, or a spermatic cord, into or out of the abdominal cavity without weakening the walls. Finding his first model unsatisfactory he created Eve. Eve was an improvement, perhaps, in that she was less subject to inguinal hernia than her companion. Her sex however has not been entirely free from hernial difficulties.

Among the more ancient descendants of Adam and Eve to be afflicted with hernia was Ramses v (1157 B.C.). According to Ruffer, who examined the mummified body, the scrotum was so large, it seems that Ramses must have suffered from a rupture and perhaps a hydrocele.

Oppenheimer mentions that the Greek warrior, Nestor, may also have had a hernia. However, he points out that in the lines:

> . . . incendi jam frigidus aevo
> Laometontiades, et Nestoris hernia possit.
> (Juvenal, Satirae vi, 325–6)[1]

hernia seems to represent the seat of sexual desire and in this phrase should be interpreted in a metaphorical sense.

Oppenheimer likewise asserts that among the ancients, persons afflicted with hernia were often the objects of great ridicule. Even the poets were not above making fun of such sufferers. In a poem written by Virgil, we read:

> . . . ducit, ut decet,
> Superbus, ecce, Noctuinus herniam
> (Catalecta iv, 7–8)[2]

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[1] "Could not there Priam, cold with age,
Or Nestor's hernia, fire catch?"

[2] "Noctuinus proudly carts about with him,
Behold! a mighty hernia."

* From The Department of Surgery, University of Rochester School of Medicine & Dentistry.

The Latin epigrammatist, Martial, contributed:

Derisor Fabianis herniarum,
Omnes quem modo colei timebant
Dicentem tumidas in hydrocelas,
Quantum nec duo dicerent Catulli
In thermis subito Neronianis
Videt se miser, et tacere coepit.
(De Spectaculis Epigrammatum xii, 84)[3]

In the preceding poem we see that Fabianus who frequently ridiculed other people suffering from a rupture or hydrocele was finally afflicted with the same disorder and "ever since he keeps his tongue at rest."

Not only were hernias described at an early date, but their treatment doubtless began with the first individuals who suffered discomfort from this cause. The first treatment was probably a reduction of the hernia and the application of bandages to prevent its protrusion. One proof of the antiquity of this method of treatment has been handed down to us in the form of a Phoenician statuette of 900 B.C. which depicts a bilateral inguinal hernia treated with bandages.

Writers of the Hippocratic school pointed out the deleterious effects of a hernia stating that the patient was not apt to be of long life, "sed anti temporis adventum senescunt."

Professor Albert finds in a passage from Caelius Aurelianus that strangulated hernia was not only known 400 years before Christ but that Praxagoras of Cos practiced taxis in an attempt at reduction. According to the same author, Praxagoras described the cause of strangulation as a hardening of the bowel contents within the herniated loop. It was thought that reduction was prevented because of the fecal solidification.

After the metastasis of Greek medicine to Alexandria, Rome and Byzantium, remarkable progress was made in medicine and surgery. Celsus, in the first century A.D., summed up the advances made by the Alexandrian school and to him is accredited the first work on surgery to be written in Latin. In Book vii of Celsus it is stated that surgery constitutes the third part of medicine; the other two branches being first, cure by diet, and second, cure by medicines.

It has been claimed that Celsus was not a physician but only a medical compiler. The opinion is supported by the fact that in places his writings sound as if they were published by a layman for the benefit of the public. When writing in Latin on the subject of hernia he was forced to use words which were popularly considered improper. He duly apologized for the immodesty, an act one would hardly attribute to a physician. Others, however, claim that Celsus was a practitioner and was the first to operate for hernia. Whichever view is held makes little difference. His writings represent the views and practices of his time.

Celsus described umbilical hernia and considered the causes of this "indecent prominence of the navel." Among these he mentioned that sometimes the intestine caused the swelling, at other times the cause was omentum, a humour, a fleshy growth which might be cancerous in nature, or air. The differential diagnosis was discussed in some detail. Methods of cure were quite numerous. The species

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[3] "Fabianus who at ruptures used to mock,
Who those with hydrocele the laughing-stock
Of all with cruel irony would make,
As two Catulli never could, that rake
Inspects his form, when in the baths undressed
And ever since he keeps his tongue at rest."

"which proceeds from air, does not admit of a cure. 'Tis dangerous also to meddle with flesh, that resembles a cancer; and therefore it must be let alone." In treating those in which intestine or omentum was present, one of the favorite procedures was to reduce the hernia and to run a double threaded needle through the base of the sac. The threads were tied on each side so that the part distal to the tie became strangulated. Sloughing was followed by scar tissue formation and a hope for cure. Other operators added an extra step in that they made a small incision at the top of the umbilical hernia and introduced a finger to make certain that bowel and omentum had been reduced before they tied the ligatures.

Celsus stated that operations with the ligature were less suitable for infants, adults, and old men than for those in early youth, the optimum age being seven to fourteen. He also thought that the person should be in good physical condition and have no bad habits. The autumn and winter seasons should be avoided, the spring being the best for operating.

Celsus dealt with ventral hernia and described it as a rupture of the peritoneum. The cause might be a blow, pressure from a heavy load, holding the breath, or pregnancy.

In the treatment of inguinal hernia he preferred conservative methods and recommended that if the patient was a child it was especially desirable to first attempt a cure by bandaging. In case an operation was indicated, the following method was employed: An incision was to be made in the groin and the testis carefully dissected out. This however, should not be performed in a strong man but only "when the patient is of a tender age and the mischief is moderate." It is thought that Celsus then recommended ligation of the sac and possibly its removal. After dissecting away as much of the structures as the operator considered necessary he was to cut away the skin edges and let the wound heal in by granulation. This produced scar tissue and a firm cicatrix at the external ring.

If the hernia was large the actual cautery was used; probably for the purpose of producing more scar tissue. The idea of using a cautery may have been received from the aphorism of Hippocrates that: "those diseases which medicines do not cure, iron (the knife?) cures; those which iron cannot cure, fire cures; and those which fire cannot cure, are reckoned wholly incurable."

From Celsus we also learn that some surgeons treated inguinal hernia by reducing the contents of the sac and applying pressure to the scrotum between two blocks of wood. Inflammation and gangrene resulted in obliteration of the sac.

Celsus as well as all other ancient writers looked with disfavor upon operation for strangulated hernia. He stated that when this accident occurred the stomach might become affected and the patient would first throw up a reddish bile, followed by green bile, and some might even vomit black bile. However, it was clear that the knife was not applicable and purgatives were not indicated. The standard treatment of a warm bath, venesection, a diet, and application of hot cataplasms was recommended. Evidently Celsus did not favor the administration of clysters for he stated that these might carry something into but could not evacuate anything out of the scrotum.

Watson finds that as early as the beginning of the second century, a hernia of the ovary was described. The observer was Soranus of Ephesus, a Greek physician who specialized in diseases of women.

In the second century, Galen wrote his famous descriptions of anatomy which were taught even into the seventeenth century. In his consideration of hernia he made two mistakes, both of which were due to the fact that the superstitions of the time prevented him from dissecting the human body. He thought that in hernia there was not only a rupture of the peritoneum but of the aponeurosis of muscles as well. Another error resulted from his dissection of monkeys, in which he found the processus vaginalis was patent. Supposing this to be the condition in the human body he argued that in hernia it was the orifice of the processus vaginalis that ruptured or dilated. Galen's Anatomy was followed so closely that it remained for Fernelius, in the sixteenth century, to prove that the peritoneum was not open in the inguinal regions.

Both Heliodorus in the second century and Oribasius in the fourth century performed operations similar to those described by Celsus. Oribasius maintained that better results followed an inflammation of the wound, since this produced a greater amount of scar tissue.

Aetius of Amida, a sixth century physician, wrote an extensive medical work, the Tetrabiblion, in which he dealt briefly with the subject of hernias. Aetius, who is thought to have been a Christian, accompanied his treatments with charms and prayers. For example, he recommended that in the preparation of a plaster the physician should repeat, "The God of Abraham, the God of Isaac, the God of Jacob, give virtue to this medicament." In regard to hernia he was a conservative, stating that the operation was very dangerous and surgical intervention when strangulation was present should in particular be avoided. He much preferred to treat his cases with a plaster, a bandage, and a prayer.

From Paulus Aegineta we learn the most regarding the ancients' treatment of hernia. Paulus, who lived in the seventh century A.D., was the last of the Greek writers. He composed a work of seven volumes which was a compilation of ancient medical writings. In his sixth volume, which relates to surgery, he gives us complete descriptions of operative procedures as performed at that time.

He described exomphalos, or prolapse of the navel, and stated that it occurred whenever the peritoneum was ruptured or prolapsed. His methods of cure of umbilical hernia differed little from those of Celsus.

Paulus divided inguinal hernia into two varieties, the distinction between the two being merely one of degree. He first described what we now call a "complete" inguinal hernia; that is, one in which the abdominal contents have descended into the scrotum. If the hernial sac contained bowel it was called an enterocele; if omentum only was present it was an epiplocele; but if both bowel and omentum were found it was an enteroepiplocele. When fluid was also present it was called an hydroenteroepiplocele.

Paulus agreed with other ancient writers in the opinion that the enterocele could occur either by rupture or by stretching of the peritoneum. If the hernia was due to rupture, the swelling appeared suddenly, was very large, and was superficial because of having burst through the peritoneum. Those occurring from distention or stretching gradually descended and appeared to be more deeply seated. He further stated that the forms of hernia from rupture of the peritoneum should not be operated upon, but those due to distention could be repaired in the following manner. The incision in the groin was usually transverse, although some made it longitudinally. The peritoneal sac was dissected free and the testis brought up out of the scrotum. A needle containing a doubled thread was passed through the peritoneum and the sac and spermatic cord tied off. Following this both the excess sac and testis were amputated. An incision was made in the lower part of the scrotum for drainage and the wounds were packed with oil and wine dressings. Paulus remarked that some very good surgeons then bathed their patients five times a day for seven days in a wooden trough of hot water. Between baths new oil and wine dressings were applied and in addition one surgeon was in the habit of rubbing pepper triturated with oil into his patient's back.

The second type of inguinal hernia was a bubonocele. In this form the swelling was still in the groin, the abdominal contents not having descended into the scrotum. All enteroceles which arose from stretching of the peritoneum were thought to start as bubonoceles.

His treatment for this second type was somewhat different. After dissecting out the sac he inverted it with a probe, pressing it back into the abdominal cavity. The bulging edges of the sac were sutured together and the probe withdrawn. In this type of operation the peritoneum was not cut nor the testis removed.

Other surgeons preferred to treat bubonocele by burning and Paulus gives us a description of that method. The patient was first asked to strain violently in order to produce the maximum amount of swelling in the groin. With black ink a triangular shaped figure was marked out around the hernia and another mark was placed in the middle of this triangle. After reducing the hernia, cauteries were applied to the mark in the middle after which the sides of the triangle were burned with gamma shaped irons. The burning was to be deep enough to touch the fat. However, Paulus warned that in lean individuals care had to be exercised to avoid burning the peritoneum. After the operation the wound was dressed and it was hoped that a cure would result from scar tissue formation.

With the rise of the Mohammedan power the Arabic speaking nations inherited the medical learning of the Greeks. They preserved and championed Greek thought so that during the tenth and eleventh centuries such names as Rhazes, Ali Abbas, Avicenna, and Albucasis appeared in medical literature. Their operations for hernia seem to be borrowed directly from Celsus, Paulus, and other early writers. The Arabians seemed afraid of the knife and for this reason contributed few new principles to surgery.

Although medicine more or less flourished in the countries conquered by the Mohammedans, yet elsewhere in Europe during the early Middle Ages, there was no progress. Hippocrates and Galen were rapidly being forgotten while the teachings of Celsus were entirely lost. Various monkish orders arose and the priests took over the practice of medicine. Relics and prayers became the common treatment for all ills. The royalty frequently called upon Jewish physicians, for during the tenth and eleventh centuries it was thought that Jews were almost the only persons who possessed medical knowledge. Evidently this faith in Jewish physicians continued for some time. Even in the sixteenth century Francis I of France, who was sick, sent to Charles V for an Israelite physician. When the doctor arrived in Paris, Francis found that he had been converted to Christianity and immediately all faith in his cure was lost. Francis then asked Solyman II, the Ottoman sultan, for a medical advisor. An old, hardened, unconverted Jew was sent, who prescribed asses' milk, which rapidly effected a cure.

Surgery, especially during the Middle Ages, fell into disrepute and to a great extent became separated from medicine. It was made a handicraft and abandoned to barbers and mechanics. Specialists arose who were known as "Incisors," or "The Cutters." One operated for cataract, one for urinary stone and another for hernia. They traveled about western Europe, keeping their methods secret and handing them down from father to son. Famous among herniotomists was the Norsini family of Italy. Horace of Norsia is reported to have performed more than two hundred herniotomies in one year. These wandering practitioners might be called "hit and run" surgeons, as frequently their work could not bear subsequent inspection. They were always prepared to leave town, if necessary, just a little sooner than they had planned. In Ferrari's book, "Une Chaire de Medecine au xv^e Siecle," we find the interesting account of the traveling Incisor who performed an operation on a lady's eye for the relief of pain. The operation however failed to accomplish the desired relief and the hapless surgeon was forced to spend the night fleeing from the lady's infuriated husband who pursued with sword in hand.

The itinerant operator had a bag full of tricks at his disposal. The lithotomists were known to hide bladder stones in their sleeves. After making a skin incision the surgeon slipped one of the stones from his sleeve and showed it to the patient, stating that he had just taken it from the bladder. Having collected his fee he hastily departed. From Ferrari one also learns of the herniotomist who was always accompanied by a dog which was put under the table during the operation. Even though the patient requested that the procedure should not include removal of the testis the surgeon generally performed a radical operation. The evidence was slipped under the table to the dog, the wound was bandaged, and surgeon and dog made their escape before the patient discovered his loss.

Although much of the surgery, especially herniotomies, lithotomies and operations for the removal of cataracts, was in the hands of itinerant operators, yet this branch of medical science was not entirely abandoned by the better class of practitioners.

After the invasion of Rome by the Northern Tribes and the decline of medicine in that center, it was not until the appearance of Roger of Salerno that we again find a noteworthy surgical writer in western Europe. About 1180 Roger wrote his "Practica

Chirurgiae," which was largely the sixth book of Paulus.

There followed the Four Masters who wrote a commentary on the work of Roger and Roland. Some insight into the surgery of the times can be obtained by noting the interesting advice given to the physician who is preparing to trephine a skull. The passage, which may be found in Gurlt in the original Latin, states that the surgeon's hands must be clean, that he must avoid coitus and foods such as onions and leeks which might corrupt the air. Furthermore, menstruating women should be avoided and the surgeon should keep himself absolutely clean. In the treatment of hernia the Four Masters as well as Roger advised exposure of the sac followed by its double ligation and transverse division.

Other famous hernia surgeons of the thirteenth and early fourteenth centuries were Hugo of Lucca, Roland of Parma, William of Salicet and Lanfranc of Milan. These were followed by Henri de Mondeville. It is evident from Mondeville's comments that surgery was considered an inferior occupation by the medical practitioners of the day. Speaking to the specialists in surgery, he advises that the surgeon, no matter how well trained he might be in medical matters, should not concern himself with these things. For, he stated, the surgeon by so doing was not only apt to encourage the rage and malevolence of the medical doctors, but if his treatments did not prove successful he would have a bad reputation with the public, which he added, would be justly deserved. He further stated that the surgeons who attempted to encroach upon the practice of the medical men might be likened to the donkey, who, wishing to show his affection for his master, tried to imitate the actions of a little dog. However, when the donkey jumped upon his master after the fashion of the little dog, the master was knocked to the ground. Whereupon the family, thinking that the donkey had gone mad, killed him. This was Mondeville's warning advice for the surgeons to keep their place.

Mondeville treated hernia quite conservatively, preferring to use trusses and bandages in most cases. He slyly stated that many herniotomies were done more for the benefit of the surgeon than for the benefit of the patient.

Following Mondeville, came the famous fourteenth century French surgeon, Guy de Chauliac. Chauliac made hernia his specialty, and like Mondeville, advised conservative treatment. He invented several types of trusses and emphasized that the truss must be fitted to each case individually. He developed a method of manipulation for the reduction of a hernia and advised an exaggerated Trendelenburg position to aid in the reduction.

In his "Geschichte der Chirurgie" Albert summarized the treatment of hernia during the Middle Ages and classified the operations into five groups; first, wandering incisors and foolish physicians performed the operation by castration; second, more careful surgeons dissected out the sac. William of Salicet, Guido, Roger, the Four Masters and Jamerius then doubly ligated and divided the sac transversely. Lanfranc tied off the sac with a simple ligature while Geraldus used a gold thread. At times Lanfranc and Petrus de Dya employed loose ligation of the sac combined with cauterization of the pubes; third, Lanfranc described inclusion of the sac and scrotum by needles whereas Roger and Alexander Benedictus passed a suture beneath the sac and tied it over a piece of wood; fourth, cauterization of structures down to the pubes was an operation sometimes performed, and fifth, Theodoric, John de Crepatis, Andreas, Petrus de Orliato and Guido mentioned chemical cauterization.

None of these methods just described proved to be a complete success, and many were accompanied by a high mortality rate. It is not surprising that surgeons such as Henri de Mondeville and Guy de Chauliac advised conservative treatment and the use of a truss. Operative procedures were being left more and more for mountebanks and traveling incisors.

Even though the barber surgeons were scorned by the medical profession, nevertheless one of their members was destined to become a revolutionary factor not only in the treatment of hernia but in surgery in general. Pierre Franco was born about the year 1500 in the village of Turriers. His early education was in the hands of wandering lithotomists, herniotomists, and cataract healers, rather than in a medical school. Because of religious persecution, he fled from southern France into Switzerland, where for a time he acted as City Surgeon at Berne. He became a very capable surgeon and performed numerous operations which his contemporaries would not attempt. Franco did a great deal toward taking the operation for hernia out of the hands of the wandering practitioner and placing it within the realm of the accomplished surgeon.

Although the first operation for the relief of strangulated hernia was supposed to have been performed by Maupasius in 1559 and reported by Roussetus, yet to Franco belongs the credit of improving and popularizing the procedure. The clinical symptoms of strangulation had been described since the time of Hippocrates, yet no one dared to operate upon the condition. Franco himself stated that if a patient died while being treated with medicines the fault was with nature but if death should follow an operation, the surgeon might have to take to his heels or be held for murder. Consequently, prior to Franco, local applications were tried and the patient either recovered or died. Frequently with this type of treatment the strangulated loop of bowel suppurated and the process broke through to the surface. Thereafter the patient was afflicted with a discharging fecal fistula in the groin. Franco, however, not only dared to operate for strangulated hernia, but he also described and recommended the procedure. He thought that if the parts surrounding the hernia were black, or if the hernia was round rather than elongated in shape, an operation should not be attempted, for these were unfavorable signs. Other harbingers of certain death were a black membrane in the patient's mouth, contracted nostrils, and sunken eyes. However, if the indications were favorable the operation should be performed. This consisted in simply cutting the constriction, using a metal staff as a grooved director to protect the bowel from injury.

Franco wrote two treatises. One, entitled "A Small Treatise on the Operative Treatment of Hernia," was published in 1556. The other, a larger work published in 1561, dealt not only with hernia but also genitourinary diseases, tumors, harelip, fractures and other surgical topics.

Another physician of the sixteenth century deserves mention. Ambroise Paré is probably the best known surgeon of that time, and although most of his work was military surgery, yet he contributed a great deal toward the treatment of hernia. He was somewhat more conservative than Pierre Franco and used the truss extensively. Paré was one of the first to describe diaphragmatic hernia. His patient had sustained a wound of the chest but seemed to recover completely. Sometime later he developed gastrointestinal symptoms and at autopsy the colon was found to have passed through a small opening into the thorax.

The operation called the "punctum aureum" was described and practiced by Paré. It consisted of dissecting down to the sac in the inguinal canal and twisting a gold wire about the neck so that the bowel could not slide down.

In general, surgery in the seventeenth and eighteenth centuries was still in unskilled hands. The majority of people could not obtain the services of a good surgeon. If they were to be operated upon only a wandering charlatan or ignorant quack was available. Then too, people themselves were ignorant and superstitious. They willingly believed in charms, magic cures, and witchcraft. It is little wonder that they were easy victims for the quack with his healing plasters, or the traveling incisor who guaranteed a cure by operation.

From Pierre Dionis, who was first surgeon to the dauphiness in the Royal Court of France, we learn that at one time Louis XIV became very much interested in the curing of hernias. It had been rumored about that the Prior of Cabrieres in Languedoc had knowledge of numerous secret remedies, one of which was for the cure of ruptures. His services were sought and he arrived at the court about 1680.

The Prior, however, was not a man to distribute secret information at random and he requested the king's promise that the receipt for his cure would not be published until after his death. Then the king was in a predicament. He did not wish to break his promise to the Prior and yet he was very anxious to see the public relieved. At last he decided that he himself would become pharmacist, that he would mix up the remedy, and charitably distribute it to all those who asked for the healing medicine. In order to prevent anyone from knowing the composition of the secret cure Louis requested that many different drugs be sent to his private rooms. Most of these were secretly discarded as the remedy consisted only of a mixture of spirit of salt with wine.

To receive the benefit of this free remedy, a note was required stating the name and age of the person afflicted. A few days later the patient could return and receive a small basket containing three bottles of the mixture along with plasters which consisted of nine different drugs. Instructions for the application of plaster and bandages and consumption of the salt and wine also accompanied each basket. This free dispensary continued four or five years. Some patients stated that they had been cured; others still had their hernias.

Upon another occasion, Madame Devoux, a widow of a Paris surgeon, appeared at the French court stating that she had found among her husband's papers an infallible plaster receipt for the cure of hernia. She was allowed to try the plaster upon some of the patients at the Invalides. Several testified a cure, whereupon she received 400 pistoles and a pension of 500 livres to cure the soldiers who were afflicted with hernia. Dionis does not give the composition of this plaster but he asserts that it was no more effectual than any other.

In 1716 Dionis published his "Cours d'operations de chirurgie" in which he stated that the conservative treatment of hernia was the best, but in order that the surgeon might be acquainted with both the good and the bad, he would describe the operation as practiced at that time. Among them he described the "Golden Stitch" in which gold wire was used, as in Paré's "punctum aureum." Another procedure, the "Royal Operation," consisted of making an incision parallel to the spermatic vessels and suturing the sac just as it lay in place. This was called the "Royal Operation" because, as it was explained, it left a man intact so that he could thereafter furnish the king with subjects. Dionis strongly condemned the removal of the testes as being contrary to both human and divine laws. He thought that it should never be used except perhaps when operating on a monk or a priest.

Although quackery prevailed among the people, yet in the larger medical centers, the eighteenth century brought an awakened interest in anatomy and surgery. Contributions to the knowledge of hernia were numerous.

In 1700 Alexis Littré reported two cases in which a Meckel's diverticulum was in the hernial sac. Even to the present time this anomaly is called Littré's hernia.

Writing in 1731, de Garengeot was the first to describe a hernia in which the sac contained the appendix. In the same year the first authentic case of lumbar hernia on record was described by him. In 1743 he reported a case of obturator hernia and discussed ventral hernia in some detail.

During the middle of the century the leading English surgeon was Percival Pott. His "Treatise on Ruptures," published in 1756, did a great deal toward broadening the knowledge of hernia.

In 1768 de Gimbernat described the ligament which now bears his name. Later he advocated the division of this ligament in cases of strangulated femoral hernia, stating that there was less danger of hemorrhage than in cutting directly upward as had been the custom.

Richter, in 1785, described a hernia in which only a part of the circumference of the intestine had herniated. This type of hernia is now called a partial enterocele or Richter's hernia.

Probably the outstanding contribution in the early nineteenth century was that of Sir Astley Cooper. Cooper was a highly skilled anatomist and his work in that regard has been very valuable. In 1804 he made a study of femoral hernia and described Cooper's ligament. Some of the earliest important studies of diaphragmatic hernia were made by him.

Other monographs published on hernia at this time were those by Scarpa. His classic description of sliding hernia or hernia of the large bowel did a great deal to clarify this subject.

Although Cooper and Scarpa as well as other eminent surgeons did a great deal toward modernizing the knowledge of hernia, yet operative repairs during the first half of the last century were notoriously unsuccessful. By this time the anatomical structures involved in a hernia were thoroughly understood. Practically all types of hernias had been observed and described. Yet upon considering the methods of treatment only slight improvement can be found over the operations described by Celsus and Paul of Aegina. Each century had brought a few minor variations, but one is impressed by the lack of change in the operative procedures for unstrangulated hernia. The incidence of recurrence was still tremendous and the mortality rate high, for this was before the days of antiseptics and anesthetics. During the early eighteenth century physicians were realizing more than ever before the failure of the operation for hernial repair. There was a marked increase in the use of the truss. Surgeons, however, were dissatisfied with this form of treatment and all sorts of methods and means were contrived for a safe yet effective treatment for hernia.

About 1820 Gerdy, a French physician, devised an operation in which he invaginated a fold of skin into the neck of the sac as far as possible. After suturing the inverted skin in place it was denuded by application of ammonia. Inflammation and adhesions followed and it was hoped that the sac might be obliterated. Rarely was a cure effected.

Many surgeons were even at that time avoiding operations on strangulated hernias. One favorite method of treatment was by the administration of tobacco clysters or enemas. Frequently the tobacco was given in the form of smoke blown into the large bowel by means of a bellows. The strong Virginia variety was preferable to the English tobacco for this purpose. Although often times the tobacco caused a relaxation of the muscles and a reduction of the hernia, yet the treatment was not without danger. Cases of death from reaction to tobacco were quite numerous.

In 1836 Bonnet of Lyons attempted to cure simple unstrangulated hernia by introducing pins through the skin into the sac. The pins were allowed to remain in place until inflammation and ulceration occurred. Pressure was then applied to help in the formation of adhesions. In reporting upon his eleven cases treated by this method, Bonnet stated that four were cured, in five the hernia recurred, and two were fatal.

Dr. Wützer, of Bonn, in 1838 described an operation which was similar to that of Gerdy. The skin was invaginated into the inguinal canal and held there by means of a wooden cylinder with a curved needle concealed in the end. When in place the needle was pushed through all structures, including the sac, into the hernial canal and out through the skin on the anterior abdominal wall. A cover was laid along the outside of the inguinal canal and screwed in place so that pressure was applied between the cylinder and the cover. This complicated apparatus was allowed to stay in place for six or seven days, after which the patient was required to rest in bed one or two weeks.

Professor Agnew of Philadelphia invented a bivalve speculum which roughly corresponded to Wützer's apparatus in that the lower blade of the speculum invaginated the skin into the inguinal canal while the upper blade could be screwed down to apply pressure. Silver sutures were used to help hold the inverted skin in place.

The injection method of treatment was championed especially by Velpeau in France and Pancoast in this country. In 1837 Velpeau first used subcutaneous injections of iodine for the purpose of exciting inflammation and causing obliteration of the sac. Pancoast in 1847 used tincture of cantharides.

Professor Wood of London, made a small incision in the skin of the scrotum which was then freed from the underlying tissues. The fascia was inverted into the inguinal canal and sutured in place so that descent of the bowel was no longer possible.

Many other methods were tried but the results from all were very discouraging. One surgeon of the last century remarked that the reason he did not operate was because he had to spend all his time applying trusses to those cases which other surgeons had cured.

Between the years 1870 and 1890 there was a complete change in methods. Antisepsis and asepsis had become established principles. A hernial sac could now be opened without fear of peritonitis and a wound could heal per primam, whereas before discharge and sloughing had been the rule. Anesthetics had come into surgical practice and the surgeon need no longer attempt a rapid operation upon a shrieking patient. Because of these two principles, the "open method" of hernial repair began to transplant all others. The operator could now dissect carefully and reunite the structures layer by layer.

High ligation of the sac, transplantation of the cord, and careful reconstruction of the inguinal canal was first described by Marcy in 1881. Macewen in 1886 published a method in which the sac was folded into a pad and used as a plug at the internal ring. The wound was then closed layer by layer. In 1889 both Bassini and Halsted described their methods and the modern era of hernial repair had finally arrived, after centuries of some success and much failure.

Hippocrates might well have been forecasting the history of the treatment of hernia when he said, "Life is short, and the art long; the occasion fleeting; experience fallacious and judgment difficult."

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THE "ORIGINAL MORTON INHALER" FOR ETHER*

By GEORGE B. ROTH, M.D.

WASHINGTON, D. C.

IN connection with the history of ether as a surgical anesthetic, two exhibits in the Smithsonian Institution of Washington, D. C., are noteworthy.

The first of the exhibits referred to above is that of the model, or copy, of the Morton Inhaler for ether, for which patent number 5365 was issued on November 13, 1847 to Augustus A. Gould and William T. G. Morton. This will be referred to as the Patent Office model.

It will be recalled that the United States Patent Office formerly required that an applicant for a patent should not only submit to the Commissioner of Patents, correct specifications covering the apparatus or article under consideration, but should deposit with the Commissioner a model or copy of the apparatus or article for which a patent was sought.

Some years after the United States Patent Office discontinued the practice of requiring a model or copy of the invention, many of the models of historic patented articles were placed by the Patent Office in the Smithsonian Institution, among them being the inhaler for ether which had been submitted to the Patent Office by Gould and Morton when application for patent No. 5365 was made. The Smithsonian Institution received this model in 1926.

The other exhibit is a "Morton Inhaler" which was placed in the Smithsonian Institution in 1911 by William J. Morton, the son of the discoverer of the anesthetic properties of ether, as a gift from Dr. Gustave P. Wiksell. This inhaler will be referred to as the "Wiksell exhibit." The label on this exhibit is as follows: "This is the only complete Morton Ether Inhaler known to exist. It was supplied to Dr. Wm. L. Johnson, of Boston, Dentist, in the fall of 1848 after the successful demonstration by Dr. W. T. G. Morton in the Massachusetts General Hospital on Friday, October 16, 1846."

"Presented to the U. S. National Museum by Dr. Gustave P. Wiksell."

The Wiksell exhibit is the inhaler that is depicted by certain medical writers[1] as being the original Morton inhaler. However, since this inhaler is not a copy of the Patent Office model either in principle or appearance it appears highly probably that the Wiksell exhibit may not be authentic. This tentative conclusion is strongly supported by the following evidence:

Significant data relating to the history of the Morton inhaler and the Wiksell exhibit were obtained from the following sources: (1) Mr. J. A. Brearley, Chief Clerk of the U. S. Patent Office; (2) Mr. F. L. Lewton, Curator, Division of Textiles and Mr. Charles Whitebread, Assistant Curator, Division of Medicine, Smithsonian Institution; (3) Dr. Worth Hale, Acting Dean, Harvard Medical School.

The United States Patent Office has furnished the following: (a) a copy of patent No. 5365, dated November 13, 1847, issued to Augustus A. Gould and William T. G. Morton, which covers the apparatus for inhaling ether, etc.; (b) a copy of the drawings illustrating the "Morton and Gould" inhaler described in patent No. 5365; (c) a copy of patent No. 4848 dated November 12, 1846 issued to C. T. Jackson and William T. G. Morton which describes the method for producing surgical anesthesia by means of ether.

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[1] Gwathmey, J. T. Anesthesia. 1925, p. 13. Clendening, L. Human Body. 1927, p. 295.

* From the Dept. of Pharmacology, George Washington Univ. School of Medicine.

Patent No. 5365 is worded as follows:

To all whom it may concern:

Be it known that we, AUGUSTUS A. GOULD and WILLIAM T. G. MORTON, of Boston, in the County of Suffolk and State of Massachusetts, have invented an inhalation apparatus to be used for the purpose of administering to persons or introducing into their lungs the vapors of ether or various other chemical matters; and we do hereby declare that the same is fully described and represented in the following specification and accompanying drawings, letters, figures and references thereof.

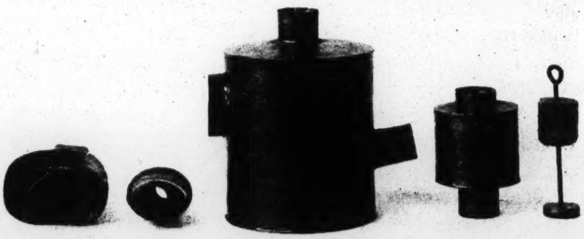

FIG. 2. UNITED STATES PATENT OFFICE MODEL OF THE MORTON INHALER (NON-ASSEMBLED), PATENT NO. 5365.

Of the said drawings Figure 1 denotes an external side elevation of our said apparatus. Fig. 2 is a central and vertical section of it.

A, Figs. 1 and 2, exhibits a receiver or vessel, made of glass or other suitable material, and shaped as seen in the drawings, or in any other convenient and proper manner. It has a mouth or opening (a) formed in one side of it, into which mouth or opening a tube B is inserted and closely fitted, as seen in Fig. 2. The said tube B is formed at its opposite end, and in any proper manner to enable a person to place and hold it in or to his mouth. A valve *b* is adapted to and arranged within the tube B, and at or near its inner end. This valve should be made to open toward the mouth piece or that end of the tube B which is to be inserted in the mouth as aforesaid. The said valve is hinged to a partition c, c, which is inserted in and fixed across the tube and has a hole *d* made through it, over which the valve closes, and rests on the partition as a seat. Another hole or passage *e* is bored or made through the top or other proper part of the tube B, and between the valve *b* and end *f* of the tube. The said hole *e* is provided with a valve or flap *g* which is hinged to the outer surface of the tube,

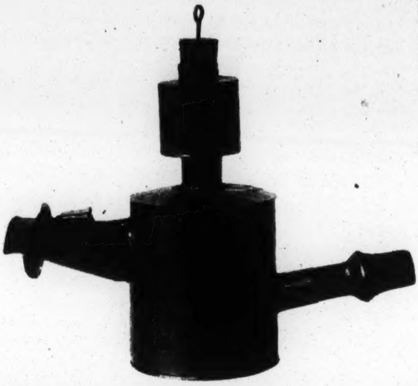

FIG. 1. UNITED STATES PATENT OFFICE MODEL OF THE MORTON INHALER (ASSEMBLED), PATENT NO. 5365.

and closes over the hole *e*. The valve *b* may be termed the induction valve and the valve *g* the eduction valve of the mouth tube B. Through the opposite side or any other proper part of the vessel A we made another passage or opening h-h which is intended to admit atmospheric air into the interior of the vessel A. This last opening may be provided with a valve opening inward or toward the interior of the vessel.

In the drawing *i* denotes the valve as applied to a tube *k* which is fitted into the opening h, h. The object of the valve *i* is to prevent the vapor within the vessel A from escaping through opening h, h. Into the vessel A we insert a sponge C which on being wet with any volatile fluid, such as ether for instance exposes a large evaporating surface to the action of the current of air, made to pass through the vessel A while the person is in the act of using the apparatus. As a convenient addition to the vessel A we provide it with a supplying reservoir D which consists of a fountain or vessel of glass or other suitable material placed on the top of the vessel A, and secured or affixed to it in any proper manner.

For the sake of convenience we terminate the lower end of the vessel D in a short tube or neck E which we insert in the top of the vessel A (which top is suitably formed to receive it) in the same manner as a cork is fitted into the neck of a bottle. A horizontal partition *l* is made to extend across the tube E and to have a series of small holes *x*, *x*, *x*, bored or made downward through it. A small piston or valve *m* sustained on the lower end of a wire *n* is arranged over the holes of the said partition *l* and should be of such size as when forced down closely upon the partition to cover all the holes through it and prevent any liquid which may be in the vessel D from escaping into the vessel A. The rod *n* and valve *m* are supported by a cork or plug *o* inserted in an opening suitably formed through the top of the vessel D. If the supplying reservoir D contains any liquid by raising the valve *m* above its seat the said liquid will trickle or pass through the opening of the partition *l* and fall on the sponge C or into the vessel A. The quantity of liquid required to keep up the necessary supply in the vessel A during inhalation may be regulated by raising the valve *m* to such height above the seat *l* as circumstances may require. The tube B may be made wholly or in part of a flexible material and of such length as circumstances may require, and for the purpose of more readily evaporating ether or any chemical material in the vessel A, heat may be applied to the said vessel in any convenient manner. It (the vessel) may be surrounded partially or wholly by a vessel of hot water, if desirable, but as a general rule it will not be necessary when sulfuric ether is to be evaporated in the vessel A.

The manner of using the apparatus is as follows: Sulfuric ether or other material to be vaporized is poured into the vessel and the apparatus is carried toward the patient and the outer end *f* of the tube B placed in his mouth. By closing his nostrils and causing him to make an inhalation through his mouth, air charged with vapor will pass from the vessel A through the opening *d* of the induction valve *b* and thence into the mouth and lungs of the patient. When he expels air or the mixture of air and etheric or other vapor from the lungs it will pass into the tube B out of the opening *e* of the valve *g* the valve *b* closing upon its seat and preventing the vapor and expelled air from passing back into the vessel A. At each inhalation of the patient the valve *i* will open and admit air to rush into the bottle or vessel A.

Fig. 3 represents on an enlarged scale a front view of the mouth piece or end of the tube B which is introduced into the mouth. Fig. 4 is a side elevation, and Fig. 5 is a top view of the same. By inspection of these figures it will be seen that the said end is provided with a curved flanch *p* which is made to extend partially or entirely around the tube and to project from it as seen in the figures. Such a curved form or shape should be given to the flanch as will not only cause it to fit closely to the lips and prevent the apparatus from being forced too far into the mouth, but prevent as far as practicable the passage of external air between it and the lips during respiration.

We do not intend to limit ourselves to the peculiar shape or configuration of any or all the parts of our improved inhalation apparatus, as we have exhibited in the drawings, nor do we intend always to employ the supplying reservoir D, or the tube *k* and its valve, but we intend to make one of such shapes and forms, and such portions of our improvement as occasion may require, while we do not change the inventional character of the mechanism which may be considered as of our discovery and as peculiarly applicable to the inhalation and exhalation of etheric or other vapors in the manner as above set forth.

Having thus described our improved inhalation apparatus, that which we claim therein is—

1. The system of induction and eduction valves (*b* and *g*) and openings (*d* and *e*) of the mouth tube B, (or any mechanical equivalent for such valves and openings) in combination with said tube and the vessel A, and made to operate therewith in the manner, and for the purpose substantially as specified.

2. We also claim the supplying reservoir D, or apparatus in combination with the evaporating vessel A, the same being arranged and made to operate together substantially as specified.

3. We also claim the supporting or lip flanch *p* as combined with or applied to the mouth piece of the tube B, and operating therewith in the manner and for the purpose, as above set forth.

4. And, for the purpose of inhaling a due portion of atmospheric air, while breathing the etheric vapors, and preventing the escape of the vapors when the apparatus is not in use, we claim, in combination with the reservoir A and air inlet or tube *k*, and its valve *i*, the whole being combined and operating together substantially as specified.

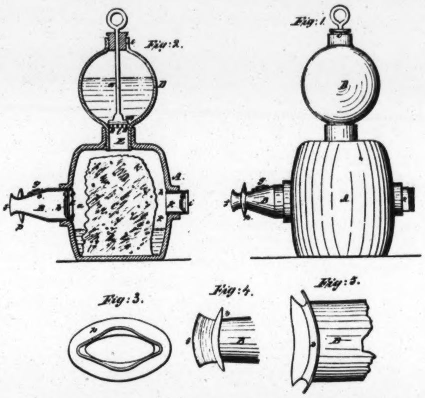

FIG. 3. DRAWINGS OF THE MORTON INHALER SUBMITTED BY MORTON AND GOULD TO OBTAIN PATENT No. 5365.

5. And we also claim, in combination with the vessel A and its air inlet and exhaustion pipes or contrivances, a sponge C, or other equivalent operating by capillary attraction or otherwise, to expose an extensive surface of liquid to the evaporative action of the air passing through the vessel A.

AUGUSTUS A. GOULD.
W. T. G. MORTON.

Witnesses:
R. H. Eddy
D. P. Wilson.

The figures referred to in patent No. 5365 are reproduced in our Figure 3, so that they may be used in connection with the verbal description of the patent.

Patent No. 4848 is given in full below since it has references to the various modes for administering ether by inhalation:

UNITED STATES PATENT OFFICE

C. T. Jackson and Wm. T. G. Morton, of Boston, Massachusetts; said C. T. Jackson Assignor to Wm. T. G. Morton.

IMPROVEMENT IN SURGICAL OPERATIONS

Specification forming part of Letter Patent No. 4848, dated November 12, 1846.

To All Whom It May Concern:

Be it known that we, CHARLES T. JACKSON AND WILLIAM T. G. MORTON, of Boston, in the county of Suffolk and State of Massachusetts have invented or discovered a new and useful Improvement in Surgical Operations on Animals, whereby we are enabled to accomplish many, if not all operations, such as are usually attended with more or less pain and suffering, without any or with very little pain to or muscular action of persons who undergo the same; and we do hereby declare that the following is a full and exact description of our said invention or discovery.

It is well known to chemists that when alcohol is submitted to distillation with certain acids peculiar compounds, termed "ethers," are formed, each of which is usually distinguished by the name of the acid employed in its preparation. It has also been known that the vapors of some, if not all, of these chemical distillations, particularly those of sulphuric ether, when breathed or introduced into the lungs of an animal have produced a peculiar effect on its nervous system, one which has been supposed to be analogous to what is usually termed "intoxication." It has never to our knowledge been known until our discovery that the inhalation of such vapors (particularly of sulphuric ether) would produce insensibility to pain, or such a state of quiet of nervous action as to render a person or animal incapable to a great extent, if not entirely, of experiencing pain while under the action of the knife or other instrument of operation of a surgeon calculated to produce pain. This is our discovery, and the combining it with or applying it to any operation of surgery for the purpose of alleviating animal suffering, as well as of enabling a surgeon to conduct his operation with little or no struggling or muscular action of the patient and with more certainty of success, constitutes our invention. The nervous quiet and insensibility to pain produced on a person is generally of short duration. The degree or extent of it or time which it lasts depends on the amount of ethereal vapor received into the system and the constitutional character of the person to whom it is administered. Practice will soon acquaint an experienced surgeon with the amount of ethereal vapor to be administered to persons for the accomplishment of the surgical operation or operations required in their respective cases. For the extraction of a tooth the individual may be thrown into the insensible state, generally speaking, only a few minutes. For the removal of a tumor or the performance of the amputation of a limb it is necessary to regulate the amount of vapor inhaled to the time required to complete the operation.

Various modes may be adopted for conveying the ethereal vapor into the lungs. A very simple one is to saturate a piece of cloth or sponge with sulphuric ether, and place it to the nostrils or mouth, so that the person may inhale the vapors. A more effective one is to take a glass or other proper vessel, like a common bottle or flask and place in it a sponge saturated with sulphuric ether. Let there be a hole made through the side of the vessel for the admission of atmospheric air, which hole may or may not be provided with a valve opening downward, or so as to allow air to pass into the vessel, a valve on the outside of the neck opening upward, and another valve in the neck and between that last mentioned and the body of the vessel or flask, which latter valve in the neck should open toward the mouth of the neck or bottle. The extremity of the neck is to be placed in the mouth of the patient, and his nostrils stopped or closed in such manner as to cause him to inhale air through the bottle, and to exhale it through the neck and out of the valve on the outside of the neck. The air thus breathed, by passing in contact with the sponge, will be charged with the ethereal vapors, which will be conveyed by it into the lungs of the patient. This will soon produce the state of insensibility or nervous quiet required.

In order to render the ether agreeable to various persons, we often combine it with one or more essential oils having pleasant perfumes. This may be effected by mixing the ether and essential oil and washing the mixture in water. The impurities will subside, and the ether, impregnated with the perfume, will rise to the top of the water. We sometimes combine a narcotic preparation—such as opium or morphine—with the ether. This may be done by any way known to chemists by which a combination of ethereal and narcotic vapors may be produced.

After a person has been put into the state of insensibility, as above described, a surgical operation may be performed upon him without, so far as repeated experiments have proved, giving to him any apparent or real pain, or so little in comparison to that produced by the usual process of conducting surgical operations as to be scarcely noticeable. There is very nearly, if not entire, absence of all pain. Immediately or soon after the operation is completed a restoration of the patient to his usual feelings takes place without, generally speaking, his having been sensible of the performance of the operation.

From the experiments we have made we are led to prefer the vapors of sulphuric ether to those of muriatic or other kind of ether; but any such may be employed which will properly produce the state of insensibility without any injurious consequences to the patient.

We are fully aware that narcotics have been administered to patients undergoing surgical operations, and, as we believe, always by introducing them into the stomach. This we consider in no respect to embody our invention, as we operate through the lungs and air-passages, and the effects produced upon the patient are entirely or so far different as to render the one of very little while the other is of immense utility. The consequences of the change are very considerable, as an immense amount of human or animal suffering can be prevented by the application of our discovery.

What we claim as our invention is—

The herein before described means by which we are enabled to effect the above highly important improvement in surgical operations—viz., by combining therewith the application of ether or the vapor thereof—substantially as above specified.

In testimony whereof we have hereto set our signatures this 27th day of October, A.D. 1846.

CHARLES T. JACKSON
WM. T. G. MORTON.

Witness:
R. H. Eddy,
W. H. Leighton.

The correspondence relating to the acquisition of the Wiksell exhibit by the Smithsonian Institution was kindly placed at my disposal by Mr. Lewton of that institution. The correspondence is between Mr. William J. Morton, the son of the inventor, and Mr. R. Rathburn who represented the Smithsonian Institution in arranging for the acquisition of the Wiksell exhibit. The essential passages in these letters are as follows:

Letter of January 24, 1905 from William J. Morton to R. Rathburn:

> So far as I know there is *only one original ether inhaler in existence* and that belongs to a Dr. Wiksell in Boston. I have written to him prevailing upon him to send it to you and he has agreed to do so. I hope he will although the Ether Museum in Boston has tried hard to get possession of this inhaler.

Letter of May 23, 1907 from William J. Morton to R. Rathburn:

> . . . after my recent interview with you in Washington . . . I at once set about getting these things together . . . This collection comprises quite a number of

objects, prominent among which . . . *an early ether inhaler, such as was used at first operations.*

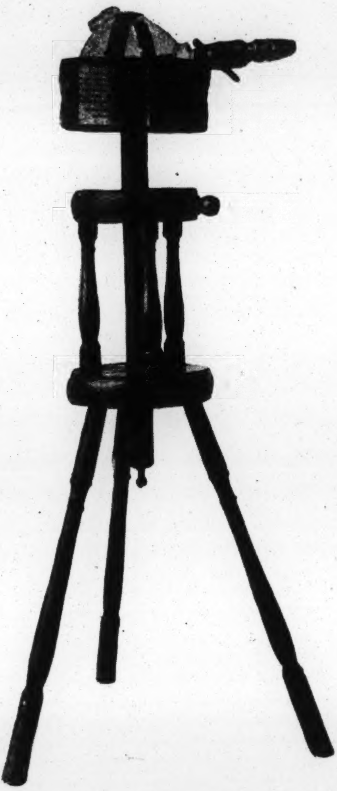

FIG. 4. THE "WIKSELL EXHIBIT" OF THE SMITHSONIAN OF WASHINGTON.

Letter of Feb. 4, 1911 from William J. Morton to R. Rathburn:

> I am now forwarding by express *an original ether inhaler* with the little stand upon which it was placed after the operator had used it. I have never seen before this particular arrangement and believe it to be unique in its way. I induced the donor, Dr. Gustave P. Wiksell, to give it to the Smithsonian rather than to a collection of similar objects in the Mass. General Hospital.

These letters are especially significant in that they disclose that Mr. William J. Morton who placed the Wiksell exhibit in the Smithsonian Institution was uncertain as to just what the Wiksell exhibit represented.

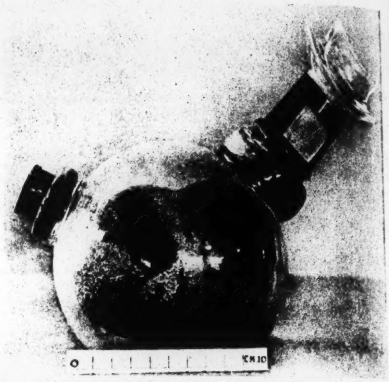

FIG. 5. THE MORTON INHALER IN THE HARVARD MEDICAL SCHOOL MUSEUM.

Copies of photographs of the Patent Office model of the inhaler on which patent No. 5365 was granted, are found in our Figures 1, 2, and 3. Figure 1 shows the apparatus in an assembled, whereas Figure 2 shows it in a dismantled form.[2] Figure 3 is a copy of the drawings submitted by Gould and Morton.

The model is made of tinned metal entirely, except for the cork in the reservoir D and the sponge C (see our Figure 3). Further detailed description of the apparatus is unnecessary as a full description is found in the application for patent No. 5365.

In the claims of the inventors for originality the following are stated to be essential features of the apparatus: (1) an evaporating vessel, (a) having inflow and outflow passages equipped with valves and (b) containing a sponge or other device for affording greater surface; (2) a reservoir from which the evaporating vessel may be supplied; (3) a supporting flange or lip on the mouthpiece which is attached to the evaporating vessel.

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[2] The photographs in Figures 1 and 2 were obtained through the kindness of Dr. Charles Whitebread, Assistant Curator of the Medical Division of the Smithsonian Institution.

A reproduction of the Wiksell exhibit of the Smithsonian Institution is depicted in our Figure 4.

The Wiksell Exhibit inhaler seems to differ essentially from the Patent Office model in that (a) it contains no reservoir for supplying the evaporating vessel; (b) it does not possess a sponge; (c) the mouthpiece is not flanged or lipped, furthermore it carries a petcock or valve of a different type than that found in the model; that is, a simple petcock without valves for inflow and outflow of gas.

Our Figure 5 is a photograph of the Morton inhaler which is considered to have been used by Dr. Morton in giving his first public demonstration of ether anesthesia at the Massachusetts General Hospital on October 16, 1846.

This inhaler may be found in the museum of the Medical School of Harvard University. It has attached to it the signature of the surgeon Dr. John Collins Warren, together with the inscription, apparently in his handwriting, stating that the inhaler was the one originally used by Dr. Morton at the first public demonstration of ether anesthesia.

There is an identical inhaler in the museum of the Massachusetts General Hospital which is also considered to be the historic inhaler used by Dr. Morton.[3]

The "Harvard" inhaler seems to be essentially similar to the Patent Office Model, differing from the latter only in not having a supply reservoir.

It is quite evident from the foregoing that the expression "Original Morton Inhaler" has two connotations. It may refer (a) to the model submitted by Gould and Morton to the United States Commissioner of Patents or, (b) to the apparatus first used by Dr. Morton at the first public demonstration of surgical anesthesia by means of ether.

From the evidence at hand we may conclude that the Wiksell exhibit in the Smithsonian Institution shown in Figure 4 does not accurately portray the "Original Morton Inhaler."

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[3] Information supplied by Dean Worth Hale of the Harvard Medical School.

NOTES ON THE MEDICAL HISTORY OF BRUGES AND THE HOSPITAL OF SAINT JOHN*

By HAROLD M. TOVELL, M.D.

TORONTO, CANADA

IN the dim past when the fabric of Roman administration was destroyed and its culture adulterated, when Clovis had succeeded to his Merovingian chieftainship and Gregory of Tours in turn had conquered the Franks for the Christian faith, there gradually arose, from this era of shadowy ghosts and mythical chronicles a new civilization nourished and sponsored by the Church. A few centuries rolled by; Europe commenced to unfold. From the obscurity of the great lowland flats of Flanders, on the banks of the Reye, near its junction with the Zwin, there in the year 856 a burg and chapel were built by one Baldwin Bras-de-Fer for the purpose of trade. This was the naissance of Bruges.

Around this chateau there gradually collected a community of merchants. The Reye became converted into a series of canals; streets took form; walls arose; the Zwin became a river of importance. The harbor was the safest in the north of Europe. Canals connected it with Ghent, Ypres, Dunkirk, Sluys and Furnis. In 1200 it was the central mart of the Hanseatic league and by the fourteenth century it was the Venice of the north. Merchants from all countries traded on its quays; the products of the east were bartered for those of the west; the furs of Russia for the jewels of the Orient; the wool of England became the cloth of Flanders. The great bankers of the world carried on the exchange. The Medici, Fuggers and Bardi increased their capital with the prosperity of the town.

Politically it rose from being the seat of an obscure nobleman to the residence of the counts of Flanders and the Dukes of Burgundy. Admired alike by plebians, kings and queens, its fame for beauty, pageants and wealth spread throughout Europe. Like all medieval towns its joys were not continuous. Wars, assaults, plagues, rebellion and tortures moved across the stage with frequent regularity until the close of the fifteenth century when Bruges, superseded by Antwerp, ceased to be a factor in commerce.

Believing that the high state of civilization developed in the fourteenth and fifteenth centuries would, from its economic force, advance the status of public health and medicine until they occupied a position in keeping with the general advancement, I thought it would be of interest to glance into the history of Bruges as a representative product of the age. To follow the medical growth of a medieval town is a rather difficult procedure even with archives at one's disposal, due to the fact that the inhabitants did not record such developments as diligently as they would a miraculous intervention of a patron saint or a successful assault upon a neighboring town.

The twelfth century opened with Bruges occupying practically the same space as today yet with fewer buildings. The houses were inflammable, fire was a constant source of destruction and terror. The streets were unpaved and as Flanders enjoyed rain then as now, they were at times impassable. Near the market place there was an open cloaca into which dead and sometimes live bodies were thrown. George, one of the murderers of Charles the Good, after having his hands cut off, was cast into the cloaca to perish. The canals were filthy, no particular attempt being made to regulate the water supply; indeed it was such an unhealthy place that it is difficult to believe that it was of any importance commercially, yet merchants from various countries were established and prospering. With its increasing importance the magistrates under divers and trying conditions finally during the thirteenth and fourteenth centuries evolved an elaborate system of drainage and water supply. For the latter, water was led from many clear streams and springs into a large reservoir at St. Bavon, a nearby hamlet at which point a waterhouse was constructed with two large towers, all of which have disappeared. The method of distribution was simple but effective; buckets running on a chain over a large wheel picked up the water from the reservoir and emptied it into a large cistern above, from which point it was distributed in conduits to all parts of the city. Man's faithful ally, the horse, furnished the motive power. That the citizens were justly proud of this municipal development is shown by the honour with which they regarded the post of keeper of the waterhouse. "He swore to be faithful and diligent in his work, that he would guard the Waterhouse and all its instruments, aqueducts and canals, and that he would never divulge its secret to any living man by word of mouth, by writing, pictures or demonstration."

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* Read before The Medical Historical Club, Toronto, November 18, 1927.

The water supply having been solved, the city fathers in their wisdom applied themselves with equal intelligence to drainage. The streets were paved, gutters being provided which drained into receptacles. Special officers known as Muederheren, "officers of mud," were appointed, whose duties were to see that the pavements were kept clean and repaired, the gutters in good order and the receptacles not choked or malodorous. Manure was to be disposed of to the neighboring farmers. Partly for hygienic reasons but mostly for commercial, the canals were deepened and enlarged; a special boat and crew were appointed to patrol the canals and see that they were free of all offensive materials, they being enjoined to pay particular attention to the removal of dead dogs and pigs. The latter being under St. Anthony's special care were allowed to roam about at will.

The political situation under Louis of Nevers (1322–1346) nearly wrecked the previous good work. Under his regime, the ramparts were destroyed, the water supply interfered with, the canals became clogged; not until the general health of the community was threatened did he allow them to be restored to their normal function. Such were a few of the difficulties experienced by a community in search of health. Yet through it all it is surprising to see with what persistence the life of the town went on.

As a result of Louis' severe chastisement, Bruges again had to devote much time and money to her pressing needs as she had done in the last half of the previous century. In 1360 pestilence broke out, followed by fire which wiped out a whole section of the town. While at the time it seemed a calamity, nevertheless, it served as an incentive to rebuild with better material. The main thoroughfares were repaved, the less important were stripped down their centers, new drains were constructed, the old ones repaired, nor did the work cease till Bruges was remade, and the already famous waterhouse was enlarged, provision being made for the erection of fountains. Public baths were established which at first proved of great benefit to the community but later became a source of flagrant immorality.

Apparently then as now the surgeons were specially looked after and did not lack for practice, because the magistrates saw fit to construct a special pit for the exclusive use of the barber surgeons in which they could deposit the blood drawn from their victims. It also suggests that their technique was not above reproach (1361).

Evidently the old unstable buildings and houses were of such a nature that the collapse of a wall or the toppling over of a roof or sign, to the detriment or death of passersby, was not uncommon, because we find according to an old Chronicler (Damhouder) that certain officials named Deelmannen were appointed, whose duty it was to inspect the streets, dwellings and shops, full power being given them either to demolish or to make necessary repairs, all charges for such work to be borne by the owner.

Dating from the early days and extending through the twelfth, thirteenth and fourteenth centuries, we find a very consistent attempt being made by the authorities to improve the quality of house construction, especially the roof. The early wooden house and thatched roof had always been a source of fire. Gradually there sprang up in various localities brick and stone edifices. Under encouragement this went on until by fire and law all wooden and thatched houses were replaced and where private funds were not sufficient the civic treasury helped. While the improvement in the housing condition may not have arisen from a standpoint of health yet it exerted a beneficial influence. The driving force was economic.

Thus from practically an enclosed field of mud with no water supply, drainage or proper housing, we find by the beginning of the fifteenth century, a veritable city of enchantment with its many turretted houses, canals wide and well kept, stone bridges with graceful arches, fountains and open spaces; churches and monasteries. It is no wonder that Pius II who visited the city in 1435 is said to have stated that Bruges was one of the three most beautiful cities he had seen, and he was widely travelled. John Paston, one of the English gentlemen who attended the wedding of Margaret of York with Charles the Bold, in 1469 wrote: "By my troth, I heard never of so great plenty as there is, and as for the Duke's court, as for lords, ladies and gentlewomen, knights, squires and gentlemen, I heard never of none like to it save King Arthur's court." We are told that, when Margaret entered the town, the streets were covered with cloth-of-gold, silks and tapestries, and that the procession had to stop ten times before reaching the market-place, to admire tableaux illustrating episodes of sacred and profane history.

From the medicolegal standpoint it is difficult to place accurately the dates of various legal enactments or trials due to the fact that no records were kept before 1608, but from certain old manuscripts a great deal can be reconstructed. Then as now, medical opinion was sought and accepted by the court. One very interesting and authentic incident demonstrating that for once at any rate medical opinion was not divided, occurred in 1490 when "one Van Neyts, a brewer's assistant had been sentenced to lose a hand and to be banished for six years, but on account of the great cold and frost and on the advice of the doctors and surgeons who reported that the first part of the sentence could not be carried out without danger to the culprit, the punishment was delayed." This custom of cutting off an arm or hand, thereby rendering the individual unable to follow his occupation to its full capacity, was most inconsistent with the functions of the communal burgomaster or as our chronicler calls him "totius reipublicae et communitatis pater" who among many duties was to take cognizance of all injuries, dealing with them as justice might require. One can here see the rudiments of a Workmen's Compensation Act or possibly something better; further the same "pater communitatis" by night accompanied by a suitable guard was to visit all houses of ill fame to see that everything was in order.

Druggists had their stalls in the public square. Here herbs, spices, roots and medicines, gathered from all quarters of the globe, were shown in great profusion to be sold locally or to foreign markets. The food supply was carefully guarded. Any merchant or trader selling bad food was placed in the pillory for a certain time and the food in question burnt before his eyes. In 1486 three Frenchmen were so treated after which they were banished for six years. Bruges thus recognized the importance of good and pure food. Not only was it important to the health of her citizens but economically she could not afford the desecration of her marts by the selling of anything which was not of first quality.

While jurisprudence is possibly outside the scope of this paper yet, as many offences entailed as a consequent punishment either mutilation or death, a few words concerning such events might be of interest. Common to all countries of that time death was administered for offences, some trivial, others serious, such as treason, homicide, highway robbery with violence, sacrilege, horse stealing, coining, arson, rape, and theft from dead bodies. It is of interest to see the ingenuity shown by the authorities to administer death. Boiling, according to the chronicler of the time, was administered in 1431 and 1455, although he fails to state the crime. Burning gave plenty of scope for the torture of the poor victim, especially the slow method which is described by an eye witness. "The victim was tied to a stake by a chain which allowed him sufficient freedom to run around and around inside a circle of fire until he collapsed, which however did not happen for a long time." Arson was always serious, especially so in the earlier days. A mere threat to burn another's house was sufficient to be punished by death. Death by the sword and hanging were of course commonly used, while burying alive, though rarely used, for some reason or other was left for the female offenders. Torture was freely employed sometimes to the innocent victim, as happened in 1464 when the authorities paid compensation for the "breaking of limbs" of the wrong person. The cutting-off of hands, fingers, or ears, or the burning and piercing of the tongue were forms of maiming, often for trivial offences, as petty theft, assault, blasphemy, seditious and evil speaking.

One Martine, the wife of Pieter Prysbeer in 1484 was branded with red hot irons first in the market place and again in front of the Bourse, at St. John's Bridge, at the place called Malberg and in the Burg. She was then bound to a stake on a scaffold and a piece of her tongue cut off. After this she was banished for six years under penalty of being buried alive. Her offence was that she had affirmed at cards that she would win "in spite of God and His Holy Mother." Branding was also very serious as the hot iron usually pierced the cheek to the teeth, leaving an unfortunate wound. Immorality was punished by forced pilgrimage to some distant shrine or banishment. Apparently public opinion was fairly strong on this point because we find the powerful guilds, doing their utmost to purge their ranks of such offenders. A master fruiterer was interdicted for allowing his mistress to carry on his trade.

Unfortunately from available sources so far I have not been able to locate any measures of public health in times of plague comparable to those put into force in Venice and as reported in the Fugger News Letters or to the regulations as issued by the medical schools of Montpellier and Paris. Bruges, however, seems to have developed a public medical service in that two physicians, two surgeons and eight midwives were appointed by the civic authorities to minister to the needs of the community with power to add during times of stress and plague. That this was considered an honourable appointment is shown by the positions of honour accorded them on all public occasions. Uniforms both for summer and winter were provided from the municipal chest as were their funeral expenses. The large proportion of midwives is undoubtedly due to the fact that in those days practically all obstetrical work was left in their care, the physician being called only to exceptional cases. It is to be regretted that a statement of the duties of this medical staff is not available. It is remarkable to find that such a service existed at the early date of 1294, and although its history is obscure it apparently represented a purely civic enterprise; all the more interesting in a period characterized as it was by the dominance of the church.

From an old fifteenth century chronicle, Bruges apparently had its accidents then as now. The chronicler is rather a plain, unimaginative person who, however, gives us a picture of things as they actually occurred. A short quotation is sufficient to show that the practictioner of medicine outside of wars and plagues had ample opportunity to become proficient in emergency work.

> Whole streets are destroyed by fire. A house collapses in the night and throws the occupants from their beds into the street. A brewer falls into his vat and perishes. An adulterous priest is slain by the outraged husband. Men, women and children fall almost daily into the canals and are fished out dead. A cooper sits down to drink a pot of beer and dies before it is finished; the bellringer of St. Sauveur, climbing to the tower, falls from the cross into the street below. Five

poor people are crushed to death in a crowd close to the Carmelite Bridge. A child's eye is knocked out in play; a workman killed by a falling wall; a child gored by a cow; another half-eaten by a pig, and a girl killed by the sails of a windmill. At the corner of the Rue Flamande a carter runs down and kills a child, and is killed in turn by a woman standing by. A rich merchant is murdered in the street and mutilated, and the jester of my Lord of Muelenbeke is slain in a public brawl. In the Burg a hand is cut off or a man hanged. Outside the walls, in the winter sunshine, six women are being slowly roasted to death; within, the streets are gay with silks and tapestries, while heads rot on the Belfry and the screams of tortured men rise from the Grand Place. And through it all the Prince rides up and down and goes a-hunting, hawking and shooting.

Common to other cities a plague hospital was built but unfortunately it seems difficult to obtain any data concerning it. Bruges was apparently not unmindful of its aged and incurable, because in 1164 or earlier there was built near the Porte de Damme the Hôpital de la Poterie which however was of secondary importance to the Hôpital Saint Jean.

To the obscure past belongs the foundation of the Hôpital Saint Jean. In 1188 it is mentioned as admitting patients. Further than this nothing appears to be known concerning its earlier history. It therefore antedates the great hospital movement of Innocent III. To the Augustinian brothers and sisters belongs the credit and honour of having founded and carried on this institution through all the changing fortunes of the ages unto the present day. Through famine, war and plague, in time of prosperity and of adversity, the hospital silently, courageously and efficiently has fulfilled its function in the life of the community. According to the custom of the time St. Jean was placed near the centre of the city, therefore, favourably situated for visitation from the wealthier citizens, who then as now appeased their conscience by this form of charitable work. To the southwest of the Grand Place opposite L'Eglise de Notre Dame one sees an unpretentious brick building, one side of which faces the rue St. Catherine while the other rises from the waters of the canal. The older thirteenth century portion designed and built by Vincent de Roode, a master mason of repute, formed then as now an edifice worthy of the city, with its steep, uneven roof of tiles, its simple Gothic arches and large windows and its bricks, once red but now enriched with many hues by the seasoning of time. The interesting small Gothic additions noted on that side which is bathed by the slow moving stream; along with its oaken entrance door surmounted by a relief of St. Augustus all produce an atmosphere in complete harmony with the enclosed garden, along whose paths the sisters pass to and fro ministering to the sick. Here all is quiet, a pleasant contrast to the noise and traffic without. Unfortunately the grounds now are not as spacious as they were, having been divided by the erection of more recent buildings. The whole group offers an interesting study of hospital construction dating as it does from the thirteenth century to the present day, and although the older parts are now used for storage purposes they nevertheless are of sounder construction than the later additions, having been built of brick with high ceilings and tile floors. These one story edifices were capable of easy and thorough cleaning and afforded excellent light and ventilation. The vista of the canal for those patients confined to bed gave pleasure by the ever changing scenes, while the spacious garden with its seclusion and repose was ideal for the convalescents. Even today the whole preserves an interesting sense of the medieval, in spite of the later portions which, while conforming to the general character, lack the charm which only comes with the passage of time.

According to the chroniclers the hospital had certain functions to perform, one of which did not always cause joy to the brothers. It would appear that it fell to their duty to provide a place of burial within the grounds for undesirables and for all malefactors who for one reason or another had met with death by execution. This custom, however, has now ceased, the last such burial occurring in 1803 when fourteen bandits with their chief, who for sometime had terrorized the country, were buried here. The cemetery has now disappeared. Apparently the alleged storing of explosives in or near a hospital under the protection of the Red Cross was not of recent origin because in 1337 gunpowder was manufactured in Bruges and one of the sites chosen for its storage was the Hôpital Saint Jean. One can imagine the consternation of the worthy brothers when informed that a part of their buildings was to be used as an arsenal. The head of the hospital was a man of many privileges among which was the position of wine gauger, which speaks well for his integrity and knowledge of his subject.

However, it is not for these interesting things that the hospital is famous, nor is it recorded as having contributed anything to the advancement of medical science. 'Tis true its buildings are of interest and will always repay the student of architecture, yet today it ranks as one of the most famous hospitals in the world, because carefully guarded within its precincts, its own peculiar possession of over four centuries, born of its own command and hung upon the walls of the unpretentious chapter house of the order, are the chef d'oeuvres of Hans Memlinc, comparable to San Marco in Florence, noted for the works of Fra Angelico.

Little is known of Memlinc's life save that he was born in Mayence about 1430, and that in 1468 we find him in Bruges. From the first he apparently succeeded because in 1478 he not only owned his own house but had sufficient means to loan money to the city. In time he corresponds with Piera della Francesca and Verrocchio in Italy and Foucquet in France. The Van Eycks, the earliest known workers in oil, who sprang full armed into the gray dawn of Flemish painting, had been dead for more than a generation but Hugo Van der Goes was painting in Ghent and Rogier Van der Weyden was at work in Brussels. From the latter Memlinc derived something no doubt, a tragic note that he himself was to portray but in a manner that voiced the emotion of the Bruges that he found awaiting him, a city already dying and to which he resigned himself. It was not until he had passed some years in its atmosphere that his work came to fruition.

At an early date a friendship was formed with the Augustinian brothers who, being anxious to beautify their hospital, gave him several commissions, the largest of which, dated 1479, was designed for the high altar and dedicated to the two Saint Johns (St.

John the Evangelist and St. John the Baptist), patron saints of the hospital. The two saints are standing on either side of the Blessed Virgin who, seated, is holding the Infant Christ on her lap; St. Barbara is placed sitting to her left, calmly reading, with her tower behind her, while St. Catherine of Alexandria with the broken wheel and sword of her martyrdom is seated on the Virgin's right. The Holy Infant is placing a ring on St. Catherine's finger. It is this act which has caused the painting to be misnamed "The Marriage of St. Catherine"; it should be the "Altar Piece of the Two Saint Johns." In the background to the right Memlinc gives a touch of life by depicting Josse Willems, a master of the hospital, carrying out his duties as public gauger of wine and nearby a great crane which affords a glimpse of the mercantile life of Bruges, enlivens the interest.

Either wing depicts scenes from the lives of the two St. Johns, while on the back one finds the portraits of the master of the hospital, Anthony Seghers, and the treasurer, Jacob de Cuenic, and opposite them Agnes Casembrood, mistress, and Claire Van Hulsen, one of the sisters, all accompanied by their patron saints. One cannot gaze upon these without feeling that they are honest portraits, done with infinite care; certainly the treasurer has the usual sad expression. In this work there is a harmony and unity of design and colour which blends the whole into an impressive poem. The object was to do honour to the patrons of the hospital, the two St. Johns, and at the same time to express the piety of the charitable sisters, who like St. Catherine (the type of contemplative, studious piety) were consecrated and espoused to Christ, and like St. Barbara (the type of active piety) were dedicated to good works.

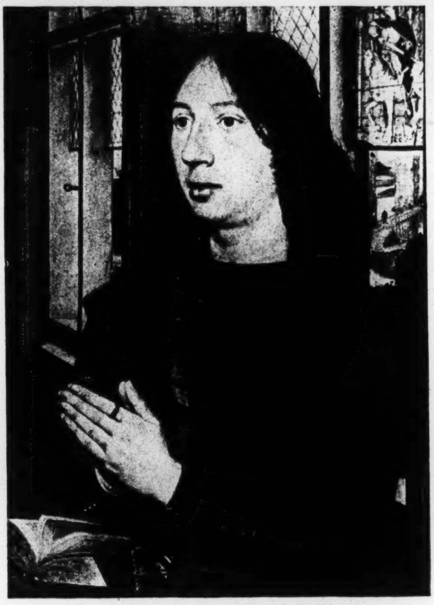

Fig. 1. Portrait of Martin Van Newenhoven, Hôpital Saint Jean, Burges.

Unfortunately we do not know anything concerning the master Anthony Seghers or any of the others except two; one, Josse Willems (1475–1488), who, as mentioned, is depicted as wine gauger in the large triptych and was known to be a friend of Memlinc, and his successor Jean Floreins (1488–1497), who shortly after his appointment lived through the ravages of the plague, after all the other brothers had been carried off. A man of resources, he pressed into service, as lay brothers, convalescents, but so untrained were they in discipline that his difficulties were only multiplied. He died in 1505. Those of us who experienced the influenza epidemic of 1918 and saw its ravages, can appreciate the trials and difficulties which Floreins encountered. It was just a year before its outbreak that he presented a small triptych, "The Adoration of the Magi," to the hospital and while smaller than the other it is probably Memlinc's finest work, exhibiting his mastery of the art of creative painting. The rhythms, vital and expressive lines, the blending of glorious colours and balance of composition, all combine to give it enduring beauty and life. Jean Floreins is seen to the right of Mary leaning over a low wall with his brother behind him, and in the background to the left of Joseph, the head of a man supposed to be Memlinc is seen, wearing a yellow cap such as was worn by the convalescents of the time, a custom which was carried on until recently. The right hand portion depicts the birth of Christ. It is worthy of note that apparently the sisters saw to it that the linen was immaculate and that the brother accoucheur wore a gown. Again Memlinc not only paints the figures in familiar clothing but carries one through the open spaces of the background into the familiar scenes of Bruges and beyond to the open air with its Flemish landscape and pastoral scenes, weaving the story amidst everyday surroundings. On the walls are paintings of interest including the Diptych of Martin Van Nieuwenhoven which is considered Memlinc's finest portrait. This work was not painted for the hospital but was brought to it from the Hospice St. Julian of which Martin was master.

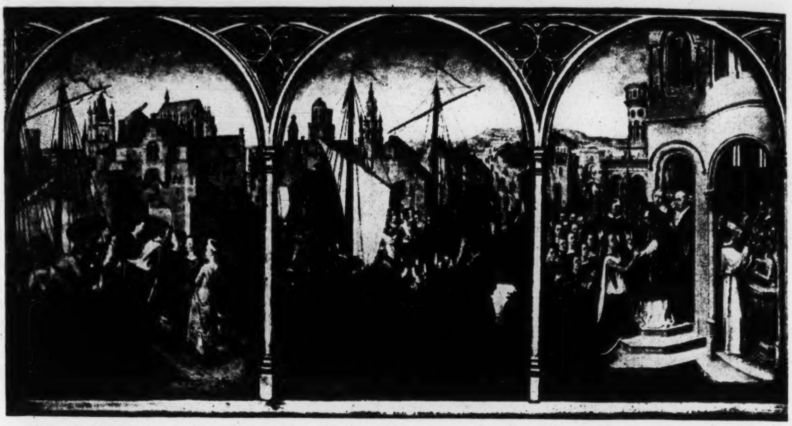

FIG. 2. CHÂSSE DE SAINTE URSULE, COTÉ GAUCHE. HÔPITAL DE SAINT JEAN, BRUGES.

Among the many objects which came into the possession of the hospital was an arm of St. Ursula. The order wishing to do honour to the sacred relic commissioned Memlinc to paint scenes from the life of St. Ursula on the sides and ends of a reliquary made in the form of a Gothic chapel. In 1889 the Jesuit father Henri Dursart discovered the journal of one Romboudt de Deppere, a priest, and registrar to the chapter of Saint Donation and a notary of Bruges from 1483 to 1491; in which capacity he witnessed on October 21st, 1489, the translation of the relics of St. Ursula to Memlinc's new shrine. These panels, which represent Memlinc's latest work, are exquisite in color and pattern, idealizing the legend in a way that gives it untold charm. Memlinc with his passion for detail and his meticulous care is the ideal narrative painter. Enamored of his subject he runs the whole gamut of colours and galvanizes the little St. Ursula into a medieval heroine. Few finer dramatic effects have been obtained in such small space than in the scene of her martyrdom, when refusing the intercession of the chief with dignity she bravely awaits her death, a small but moving and poetic figure in her graceful, clinging garments. Of historical interest is the architecture of Cologne, accurate in detail, reminiscent of Memlinc's youth. The action and vivacity of the embarkation is unsurpassed, while in the panel depicting the arrival at Rome, the massed grouping of the Virgins' heads and the tender, fatherly beneficence of the pope make this small picture one of high merit.

In Memlinc we have the consummation of primitive Flemish art, springing from the soil and bound to the character of the people reflecting their love of life with their love of God, nature becomes the mirror in which the divinity is reflected, beautifully expressed in Max Elskamp's poem which might be a description of the triptychs.

And Mary reads a Gospel page,
With folded hands in the silent hours,
And Mary reads a Gospel page,
Where the meadow sings with flowers . . .

And now the angels in the clouds,
And the birds too in chorus sing,
While the beasts graze, with foreheads bowed,
The plants of scented blossoming;

And Mary reads a Gospel page,
The pealing hours she overhears,
Forgets the time and all the years,
For Mary reads a Gospel page;

And masons building cities go
Homeward in the evening hours,
And, cocks of gold on belfry towers,
Clouds and breezes pass and blow.

The death of Memlinc, 1504, coincided with the death of Bruges. He was buried in her midst. It is fitting that he should have painted when he did.

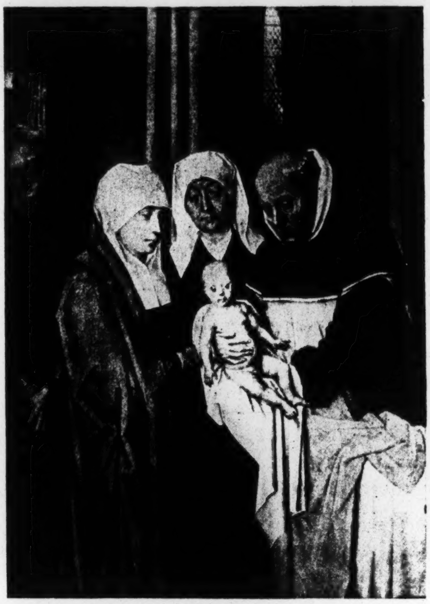

FIG. 3. FRAGMENT, ADORATION DES MAGES, HÔPITAL DE SAINT JEAN, BRUGES.

With his mystic sweetness and repose he has walked along the canals, which are falling asleep, he has watched under their waters the flight of the pale clouds, his eye has followed the wandering flotilla of leaves which the wind scatters over their surface, he has seen the flowering of the glycins, which fall from the walls to drop lightly in the water, he has taken long rambles in the courts of the convents where the plane trees are becoming bare, where, behind the glitter of the thousand window panes of the facades, life is being extinguished and muffled with silence, so that through the egoism of peace, it may atone for its orgy of materialism, of colour, and of tumult which has been going on for so many years outside, he loves the fine precious landscapes in which shimmer the limpid pinks and the blues of heaven. One would say that he rarely comes forth from his inner life, that he rarely sees life save through the glass of his windows, thereby giving his crowds the appearance of being far away and his landscapes the appearance of being precious, veiled, and spiritual. He does not himself experience the misfortunes of the world but rather he finds its trace in the attitudes of the kneeling men and women whom he poses symmetrically; he finds that trace on their face whom he scrutinizes slowly, noting how the suffering of several generations has accumulated in the countenances of men and in the pale, sad, and gentle faces of the women, Memlinc is a very careful, somewhat discreet and timid man, infinitely patient and attentive, infinitely the artist, with a tender and cloistered mysticism. (Faure.)

He is the culmination of that Bruges whose burghers living their life to the full, through peace and war brought about its glory. Memlinc by his work crowned even in its death their effort. It is the Hôpital Saint Jean which preserves their memory.

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EDITORIALS

THE HISTORICAL PROGRAM OF THE SIXTEENTH ANNUAL SESSION OF THE AMERICAN COLLEGE OF PHYSICIANS IN SAN FRANCISCO, APRIL 4–8, 1932

An interesting feature of the last annual session of the American College of Physicians in San Francisco was the large space devoted in the program of the session to medical history. If the enthusiasm of those in attendance may be taken as a criterion of success these special historical programs were among the most significant of the entire session.

During the evening meeting of the first day of the session, Dr. Richard E. Scammon, Dean of Medical Sciences of the University of Minnesota, gave a most delightful historical account of St. Bartholomew's Hospital, London, and Dr. George Dock, Pasadena, California, presented an engaging paper on the "First Aphorism of Hippocrates."

At the annual banquet of the College, Dr. Charles Singer of London, visiting professor of the history of biology at the University of California, was the speaker. He spoke most entertainingly on "A Great Country Doctor," referring to Francis Adams (1796–1861), the famous translator and commentator on Hippocrates and Paulus Aegineta.

Two special historical symposia were arranged for the College. The first dealt with the medical history of Western America and included papers on early Peruvian medicine by Dr. J. R. Sharpsteen, early Mexican medicine by Nathan van Patten, a survey of California's medical history by Dr. Henry Harris, and an account of medicine in the Pacific Northwest by Dr. Olaf Larsell. An important point emphasized by the papers in this symposium was the significance of disease and the treatment of disease in the conquest of new lands. While destruction of primitive peoples through contact with the diseases of white men is usually brought up in this connection it is not so generally realized that the medical aid offered by the newcomer was frequently an important factor in making peaceful contact with the aborigines.

The second symposium dealt with anatomical traditions of the Renaissance and their relation to the modern teaching of anatomy. This was arranged by Dr. S. V. Larkey, assistant professor of medical history and bibliography, University of California Medical School, and was participated in by Dr. Charles Singer and Dr. John B. de C. M. Saunders. An extraordinary exhibit of anatomical texts was set up in the historical room of the Lane Medical Library for use in illustrating this symposium. The scholastic tradition of teaching anatomy was compared with the Mondinus tradition, and the interesting point was developed that the latter continued to maintain its influence in the teaching of anatomy even long after the appearance of Vesalius' "Fabrica" in 1543. It is significant that most of the compendia following the "Fabrica" were arranged according to the more practical system of Mondinus. The symposium emphasized the importance of small vernacular texts in disseminating knowledge of anatomy.

In addition to the very remarkable exhibit of anatomical books at the Lane Library, a special exhibit of prints relating to the heart and circulation was set up in the University of California Medical School Library, by Dr. S. P. Lucia.

In connection with the visit of the American College of Physicians to the Pacific Coast, the Huntington Library at San Marino arranged, through the assistance of Dr. S. V. Larkey, to place on display a very comprehensive exhibit of manuscripts, documents, and books illustrating Tudor medicine. A special pamphlet describing this exhibit has been prepared by Dr. Larkey and may be obtained from the Huntington Library.

THE AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE

THE eighth annual meeting of The American Association of the History of Medicine was held at the Haddon Hall Hotel, Benjamin West Room, May 2, 1932. The President, Dr. David Riesman, presided. There were about fifty present.

The meeting was called to order at 2:00 P.M. and the following papers were read:

DR. CARL V. WELLER: Memoir of the Late Dr. Aldred Scott Warthin.

DR. JAMES J. WALSH: Medieval Popularization of Medicine.

DR. CHARLES W. BURR: Witchcraft and Medicine (with exhibition of books pertaining to the history of witchcraft). Discussed by Dr. James J. Walsh.

CAPTAIN C. S. BUTLER: Caligula. Discussed by Dr. Wm. H. Welch.

DR. HERBERT FOX: Leeuwenhoek. Discussed by Drs. Wm. H. Welch, E. B. Krumbhaar, and C. V. Weller.

DR. WILLIAM S. MIDDLETON: William Wood Gerhard. Discussed by Dr. E. B. Krumbhaar.

DR. H. R. M. LANDIS: The Reception of Koch's Discovery of the Tubercle Bacillus in the United States. (Read by title.)

DR. W. W. FORD: Life and Early Works of Koch. Discussed by Dr. Wm. H. Welch.

MISS ADA GOLDBERG: Early Manuscript of the Surgery of Roger of Palermo. (Read by title.)

The annual dinner was attended by fifty-five members and guests. After the dinner the following papers were given:

DR. FIELDING O. LEWIS: Washington's Last Illness.

DR. W. HORSLEY GANTT: Pre-Revolutionary Russian Medicine.

DR. LEWELLYS F. BARKER: Soviet Medicine.

DR. EDWARD A. SCHUMANN: Goethe as a Naturalist.

At the annual business meeting the following officers were elected for the year 1932–33:

Dr. Gerald B. Webb *President*
Dr. W. S. Miller *Vice-President*
Dr. W. S. Middleton *Secretary-Treasurer*
Dr. Joseph L. Miller *Councilor* (four year term)

On behalf of the Council the Secretary announced the election of fifteen new members.

Carl V. Weller, *Secretary.*

DR. RUSH'S LETTERS SOUGHT

FOR the past two years Dr. Nathan G. Goodman, Philadelphia historian, has been carrying on an extensive study of the life and work of Dr. Benjamm Rush (1745–1813), distinguished Phin adelphia physician. He is now co-il-pleting this task and is anxious to examine any original Rush letters or papers in private hands. Information will be appreciated by him and should be addressed to 301 W. School House Lane, Germantown, Pa.

Dr. Goodman has recently published "The Ingenious Dr. Franklin" and the Modern Library edition, "The Autobiography of Benjamin Franklin and Selected Writings."

[From Les Sonnets du Docteur, 1884.]

BOOK REVIEWS

Clio Medica. Italian Medicine. By Arturo Castiglioni, M.D., Professor of the History of Medicine, Royal University of Padua, Italy. Translated by E. B. Krumbhaar, M.D., Professor of Pathology, University of Pennsylvania. With 11 illus. N. Y., Paul B. Hoeber, Inc., 1932.

This is an excellent addition to the most delightful series of monographs on medical history, Clio Medica, which are being produced under the general editorship of Dr. Krumbhaar, the translator and editor of the present volume.

Professor Castiglioni is the author of a monumental one-volume History of Medicine, which has been translated into French, and it is hoped will soon be into English. This little book sustains its author's reputation for ability to condense into small space an ample picture of a great subject. A notable feature is the manner in which the broader and more important topics, such as the rise of the Italian universities and the development of the study of anatomy in the sixteenth century are given what one feels is quite adequate attention, without on the other hand interrupting the even course of the narrative. As those who have had experience know, it is much harder to deal concisely with large historical subjects, than to treat them expansively. Perhaps it is largely due to the skill of the Translator that the text of Castiglioni's work reads so well in English, yet the best of translations would not have sufficed if the original had not been so excellently expressed. The entire range of Italian medical history from the earliest times to the present day is most delightfully presented in this small volume, which can be safely ranked as one of the best of the Clio Medica series.

Mental Healers: Franz Anton Mesmer, Mary Baker Eddy, Sigmund Freud. By Stefan Zweig. Translated by Eden and Cedar Paul. N. Y., Viking Press, 1932.

The three biographies which make up this volume are not merely narratives of the lives of their subjects, nor records of their work and achievements. The Author endeavors to explain the underlying reasons why an overenthusiastic dabbler in the newly discovered phenomenon of electricity; an ignorant, ill-natured, avaricious woman, and a psychiatrist whose views conflict with those of most of his colleagues, should have each of them in entirely different ways accomplished such astonishing results in the face of the most determined opposition. In a very interesting Introduction Zweig deals with the conflict which so distinctly prevails today between the ordinary layman's conception of disease, and its cure, and the scientific methods which are employed by physicians in their professional work. With the multiplication and perfection of instruments of precision and mechanical aids to diagnosis, the personality of the physician or healer has become gradually of less and less interest or importance to the patient. Yet, as Zweig says, "The people do not want the expert who has a scientific knowledge of disease; what it desires is the medicine man who has power to oust the ailment," and this explains why the advent of a successful "healer," brings multitudes to his standard. The most interesting feature of such phenomena is that at a time when scientific medicine is accomplishing such wonderful things, these "interlopers," as Zweig terms them, with the age-old methods of healing by suggestion or mental treatment, devoid of any technical armamentarium are often successful where the scientific physician fails. Zweig believes that the dogmatism with which scientific medicine cast aside all methods of treatment which it regarded as unscientific is giving way to a more lenient viewpoint, as expressed by Sauerbruch in his statement "that perhaps the purely bacteriological and serological conception of disease may have led medical science into a blind alley."

In his essay on Mesmer, Zweig is more charitable than most of those who have written about that eccentric character. He minimizes the undoubtable element of charlatanry in his methods and considers him as one who really practiced hypnotism though as a pioneer, not able fully to understand its proper uses and limitations.

To Mary Baker Glover Patterson Eddy he awards her proper place as a successful charlatan, but thinks that she builded better than she knew, in that so many thousands of people have undoubtedly found mental, or even physical, relief in her jumble of so-called religion and quackery.

Zweig evidently considers Freud as entirely outside of and above the class of his two predecessors in this trilogy. He sympathizes with his destruction of what he (Zweig) terms "the preposterous mummy of pre-war morality," which he thinks was the result of a "concentric campaign against sincerity," and inveighs against the "ruthless generation of pedagogues," who incessantly reiterated the command to be "moral" and "self-controlled." He lauds Freud's theorem that "always, or almost invariably, a neurosis is due to a sexual impulse which, having been unable to obtain gratification, having been inhibited and dammed up, becomes an oppression to the mental life," and he endorses his idea of the existence of the libido in the suckling babe, justifying his tendency to overstress the sexual, because for so many decades the sexual had been undervalued and hidden away out of sight. He concludes that Freud's teaching, "has long since made good and been established as irrefutable."

Even if one disagrees with some of the estimates made by Zweig of the various phases in the work of the three healers which he has studied, this book is stimulating and well worth reading.

THE STORY OF MEDICINE FROM MEDICINE MAN TO MODERN PHYSICIAN. By Victor Robinson, M.D. N. Y., Albert & Charles Boni, 1931.

This story of medicine is written in a truly modern biographical style. With a light touch and a deft turning of phrases, the subject matter is made interesting. The style of this book will appeal more to the layman than to the serious-minded medical historian.

Probably with a view to popular appeal, the dramatic episodes are stressed rather than the real scientific progress of medicine. This is perhaps illustrated best by the fact that out of five hundred pages covering "Medicine Man to Modern Physician" ten pages are devoted to Burke and Hare and their body-snatching activities.

The book will in no way replace or compete with any of the standard serious histories of medicine but may on the other hand make an appeal and stimulate interest on the part of those by whom the more serious volumes would be considered "highbrow."

PAUL B. HOEBER

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